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## The Ontario Economy in 1968

## Preliminary Population Projections for Ontario, 1971-1991

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## Selected Economic Indicators

A publication of the  
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and Economics  
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Hon. Charles S. MacNaughton  
*Treasurer of Ontario and  
Minister of Economics*  
H. Ian Macdonald  
*Deputy Minister*

The *Ontario Economic Review* is prepared and edited bimonthly in the Economic Analysis Branch of the Economic and Statistical Services Division, Department of Treasury and Economics. The review presents articles of interest as well as current information on economic activity in Ontario. Signed articles reflect the opinions of their authors and do not necessarily represent the views of the Department.

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### About the Review

The feature article for the January-February edition of the *Ontario Economic Review* presents long-term population estimates for the Province of Ontario. The projections, by five-year age groups and for five-year intervals, are based primarily on 1966 census data and reflect current demographic trends.

At present, fertility rates are decreasing and death rates continue to decline while net migration adds an average population increment of approximately 50,000 per year in Ontario.

However, it should be emphasized that these projections represent extensions of current demographic trends and thus reflect the anticipated outcome of changes in the population structure. Therefore, to the extent that social attitudes and economic conditions are subject to change, these projections should be considered preliminary.

This article, an extract from a more detailed study, was prepared by Mr. R. Kogler, Economist with the Economic Analysis Branch, Economic and Statistical Services Division, Department of Treasury and Economics. The author acknowledges with appreciation the contribution of Dr. J. Samuel, formerly with the Economic Analysis Branch, to the research and preparation of this study.

The material for the review of the Ontario Economy in 1968 was largely prepared by the Economic Planning Branch of the Policy Planning Division, Department of Treasury and Economics.

### Indicator Charts, Pages 10-12

Fluctuations in aggregate economic activity — commonly used to define business cycles — do not necessarily correspond with fluctuations in the individual activities which make up the aggregate. Instead different indicators of economic activity may vary with respect to both their rates of growth and the timing of their peaks and troughs: some may grow more rapidly than others, some change direction sooner.

Those activities which tend to assume a direction in advance of the aggregate — because they relate to future rather than present production — are referred to as leading indicators, and are widely used to anticipate the short-run future course of the overall economy. The charts on pages 10-12 in the *Ontario Economic Review* present a number of these leading indicators, as well as several which are coincidental to or lag behind the aggregate, to provide for the reader an opportunity to make such an evaluation.

While comparisons of the timing and direction of general changes in the various indicators can readily be made, great care must be exercised in making such a comparison of the amplitude of fluctuations. Of the three vertical scales used — 'A' (arithmetic) and 'L1' and 'L2' (logarithmic scales with one and two cycles respectively over a given vertical distance) — only the logarithmic scales can be used to compare relative changes in different indicators. *And this applies only when all series being compared are on the same logarithmic scale.* In such a situation all parallel lines represent equal rates of growth, the exact rate of growth being determined by the slope of the line.



# The Ontario Economy in 1968

1

The tempo of economic activity picked up sharply in 1968 after passing through a period of slow growth the year before. The rising gains in the economy exceeded even the most optimistic predictions of one year ago. Gross provincial product — the total value of final goods and services produced in Ontario — rose to an estimated \$26.9 billion, up 8.0 per cent from the \$24.9 billion recorded in 1967. Unlike the previous year, moreover, 1968 saw real growth (4.5 per cent) exceed the growth of prices (3.5 per cent).

This more rapid pace in the economy has been reflected in rising income, production, investment and employment. At a more visible level, it has shown itself in rising housing construction, increased purchases of automobiles and a general increase in the purchases of a wide variety of consumer goods.

What has made these advances all the more remarkable is the number of adverse factors which at times confronted the economy in 1968. From the very beginning of the year there were pressures which ordinarily might have seriously impaired the province's economic growth. Early in the year the United States announced a number of measures designed to improve its balance of payments position. Among these was one which appeared to threaten Canada's economic health: the restriction of investment in U.S. subsidiaries. Speculation that this would lead to massive repatriation of U.S. funds produced fears for the Canadian economy which did in fact result in abnormally large sales of Canadian dollars. This finally subsided when the U.S. provided assurances that funds would not have to leave Canada, and was later reinforced by the exemption of Canada from U.S. guidelines on direct investment and lending by U.S. banks.

This was barely over when the international monetary crisis of March developed over speculation about the future role of

gold. This was eased with the recommendation and acceptance of the two-price gold system. Under this arrangement, central banks will buy and sell gold at the official price of \$35 (U.S.) an ounce, while the price on the open market would be free to fluctuate. The system appeared to function effectively during the second and third quarters of the year but new monetary unrest in the latter months revealed that it was only partially effective in facilitating stability and may be considered more of a stopgap measure than a final solution to international monetary problems.

Responding to a decided easing in U.S. monetary policy and credit conditions and faced with the problem of replenishing government cash balances — which were being rapidly depleted by the rebuilding of exchange reserves lost in January, the redemption of Canada Savings Bonds and higher than projected government outlays — the Bank of Canada embarked on a policy of monetary ease. Successive reductions in the bank rate to its pre-crisis level were accompanied by a 14 per cent expansion in the public money supply over a seven-month period. Banks were provided with sufficient reserves to accommodate a moderate rise in loan demand as well as to add over \$1.0 billion to their treasury bill and government bond holdings. Money market rates went below 5.5 per cent, and yields on long-term government bonds dipped below 6.5 per cent.

The final quarter of 1968 saw a new crisis on the international monetary scene involving the major European currencies. However, the Canadian dollar remained strong. The lack of response of the buoyant U.S. economy to fiscal restraint prompted the Federal Reserve System to shift to a less permissive stance and to reinforce this move on December 17th by raising the discount rate from 5.25 per cent to 5.5 per cent. The Bank of Canada followed almost immediately with an increase in the bank rate from 6.0 per cent to 6.5 per cent. Intense pessimism, especially

in connection with widespread inflationary expectations, engulfed bond markets during November and December, and bond yields rose well above their earlier peaks while short-term rates advanced moderately.

Ontario was also hard hit by strikes in 1968, especially in the first half of the year. Industrial disputes — particularly in the automobile industry, which is virtually all located in this province — seriously restrained production early in the year. As a result more man-days of work were lost in less than six months than had been lost throughout all of 1967. As the leading industrial province, Ontario has carried a substantial proportion of the total Canadian burden in 1968. Out of a total loss of 4.6 million man-days, Ontario has accounted for 60 per cent or 2.8 million man-days during the first nine months of 1968.

Despite these adverse factors, any one of which would have been considered harmful to the economy, Ontario scored impressively in 1968. Undoubtedly the largest single contributing factor was the outstanding 15.0 per cent rise in provincial exports. At the national level the total value of exports increased by 19.0 per cent — more than twice the growth target set by the federal government and the biggest annual percentage increase in 17 years.

Export growth was concentrated in the United States which took more than 67.0 per cent of total Canadian shipments abroad. Sales to the U.S. expanded in value by a remarkable 25.4 per cent to \$9,183 million, however, sales to all other countries increased by less than 7.5 per cent to \$4,393 million. For the fourth consecutive year since the inception of the Canada-U.S. Auto Agreement Canada's total automotive exports were impressively strong rising approximately 52.0 per cent over 1967, as American consumers increased their spending reflecting higher incomes. By year-end the annual value of auto exports was approximately \$1,363.9 million — almost 10 times what it was in 1965, the first year of the agreement. In addition, since the auto trade agreement was signed in 1965, about 50,000 new jobs have been established in Canada and about \$600 million invested in new plant and equipment. Added to this generally buoyant environment was the stimulus of strike-induced purchases from Canada. In an attempt to protect against an anticipated steel strike — which never materialized — Ameri-

## New Motor Vehicle Sales: Ontario

	1967	1968 <sup>1</sup>	1968/67
	Units Sold		Per Cent Change
Passenger	274,976	304,673	10.8
Commercial	44,863	50,515	12.6
Total	319,839	355,021	11.0

<sup>1</sup>estimate, Department of Treasury and Economics.

Source: DBS, New Motor Vehicle Sales.



## Canadian Domestic Exports, 1965-1968

	1965	1966	1967	1968	66/65	67/66	68/67
	\$ Million				Per Cent Change		
<b>Commodity Group:</b>							
Food, feed, beverages and tobacco	1,629.8	1,888.5	1,602.1	1,530.0 <sup>1</sup>	15.9	-15.1	-4.5 <sup>1</sup>
Inedible crude materials	1,763.7	1,947.3	2,108.3	2,483.5 <sup>1</sup>	10.4	8.2	17.8 <sup>1</sup>
Inedible fabricated materials	3,728.8	4,012.2	4,229.1	4,854.9 <sup>1</sup>	7.6	5.4	14.8 <sup>1</sup>
Inedible end products	1,300.1	2,119.3	3,106.8	4,240.7 <sup>1</sup>	63.0	46.6	36.5 <sup>1</sup>
<b>Geographic Group:</b>							
United States	4,840.5	6,234.9	7,323.2	9,183.2	24.5	17.4	25.4
United Kingdom	1,174.3	1,131.8	1,178.1	1,224.1	-4.4	4.1	3.9
All Others	2,510.3	2,959.1	2,909.7	3,169.2	16.3	-2.0	8.9
<b>Total</b>	<b>8,525.1</b>	<b>10,325.9</b>	<b>11,410.9</b>	<b>13,576.4</b>	<b>18.1</b>	<b>10.3</b>	<b>19.0</b>

<sup>1</sup>estimate. Department of Treasury and Economics.

Source: DBS, Summary of Exports.

## Total Motor Vehicle and Parts Exports

	1967	1968	1968/67
	\$ Million		Per Cent Change
Passenger automobiles and chassis	879.4	1,363.9	55.1
Other motor vehicles	326.7	458.7	40.4
Motor vehicle engines and parts	158.9	251.1	58.1
Motor vehicle parts, except engines	365.1	566.5	55.1
<b>Total</b>	<b>1,730.1</b>	<b>2,640.2</b>	<b>52.6</b>

Source: DBS, Summary of Exports.

cans sharply increased imports of iron and steel products as well as a number of other important metals. The result for Canada was a remarkable advance in its exports of metals to the United States, one which helped push total Canadian exports to all countries to \$13.6 billion.

Although exports dominated the advances made in 1968, and played an important role in pulling the entire nation out of the 1967 slowdown, there were other noteworthy improvements as well. Ontario's housing construction rose sharply for the second successive year. The injection of additional funds into housing and some easing in the money markets contributed to the estimated record 80,375 housing starts, a gain of approximately 18.0 per cent.

Personal consumption, reflected in retail sales, also moved up sharply in 1968. Total retail sales rose to \$9.7 billion in Ontario for the first eleven months, up approximately 9.0 per cent from 1967's \$8.9 billion. The largest advances, ranging between eight and twelve

per cent, took place in motor vehicles, garages and filling stations, department, general and grocery stores.

Rising sales were a reflection of yet another prominent advance, that of personal income. While the gain in wages and salaries eased slightly from the exceedingly high growth rate of 1967, it was nevertheless quite substantial. Improved profits — reflecting higher productivity gains — added to this and helped push total Ontario personal income to \$20.5 billion, a gain of approximately nine per cent.

Of course the gains in the economy were not all impressive. While labour force and employment both rose from their 1967 levels, labour force rose more rapidly, widening the gap between them and increasing the rate of unemployment. The labour force reached 2,935,000 on an annual basis in 1968, while employment rose to 2,830,000. The resulting 3.6 per cent unemployment rate represented an increase from the 3.2 per cent rate of the preceding year, but still compared quite

favourably with the 1968 Canadian rate of 4.9 per cent.

There were other instances of modest gains. Non-residential construction, unlike housing, moved ahead only moderately with most of the activity centred in commercial, institutional and government construction. Investment in machinery and equipment too was somewhat restrained. According to the mid-1968 survey of investment intentions, a gain of only 1.8 per cent was to have been anticipated for all of 1968. This same survey outlined a total gain of 7.0 per cent for all private and public investment, taking it from \$5.3 billion in 1967 to \$5.6 billion in 1968. Most of this gain is attributable to the 17.7 per cent rise in housing investment.

On the whole, there has been a modest improvement in the price situation although there was some deterioration toward the end of the year. The near four per cent price increase of 1967 should ease marginally to approximately 3.5 per cent in 1968 (according to implicit price indexes of gross national expenditure) as the pressures for higher wages and salaries abated very slightly.

For the third successive year price increases were fairly large, accounting for a major portion of the rise in gross national and gross provincial products. Following a pattern very close to that of 1967 price increases were largely the result of excessive demand with increased prices mainly due to rising costs, in particular rising wages. Once again the largest increases came in the housing, government expenditure and service sectors with gains ranging roughly between



# The Consumer Price Index, Canada, Ottawa and Toronto, December 1968/December 1967<sup>1</sup>

	All Items	Food	Housing	Clothing	Trans- portation	Health and Personal Care	Recreation and Reading	Tobacco and Alcohol
<b>Canada</b>								
1968	158.0	154.4	161.2	138.8	162.7	201.0	180.1	141.1
1967	151.8	148.6	153.8	134.7	159.6	193.8	169.7	133.0
% Change	4.1	3.9	4.8	3.0	1.9	3.7	6.1	6.1
<b>Ottawa</b>								
1968	156.5	154.8	151.9	144.7	178.0	211.9	176.5	152.2
1967	150.1	150.4	144.9	140.2	169.8	206.1	165.4	139.8
% Change	4.3	2.9	4.8	3.2	4.8	2.8	6.7	8.9
<b>Toronto</b>								
1968	159.4	152.1	161.9	146.9	160.8	196.2	221.8	149.1
1967	153.3	146.4	154.8	142.3	160.0	191.3	210.9	136.0
% Change	4.0	3.9	4.6	3.2	0.5	2.6	5.2	9.6

Source: DBS, Price Movements.

four and seven per cent. One major exception from last year was food prices which increased very slightly in 1967 but moved up more than three per cent in 1968. In other areas prices increased at approximately the same rate as the preceding year with the small increase in export prices once again helpful in Canada's struggle to remain competitive in world markets.

Looking at the consumer price index, the other important measure of price increases in the economy, the overall increase for all items was 4.1 per cent from December 1967 to December 1968. Gains here also showed a tendency to be concentrated in services while food prices showed a more than average expected increase of 3.9 per cent. Housing prices also experienced a sharp increase last year.

On a regional basis, the two Ontario centres covered by the survey — Toronto and Ottawa — experienced price increases equal to and greater than the national average. In Toronto, the December 1968 level of 159.4 was 4.0 per cent above the corresponding level twelve months earlier. The Ottawa level of 156.5 was 4.3 per cent higher than one year ago. Relative to nationwide increases, food, housing and clothing prices rose approximately the same amount in the two Ontario centres. While transportation costs in Toronto increased by 0.5 per cent, the corresponding index for Ottawa rose 4.8 per cent. Ottawa surpassed Canada in the recreation and reading component as well as registering — along with Toronto — significantly

larger than national gains in the tobacco and alcohol category last year.

Looking to the future, the most important unknown factor to reckon with is the rate of economic growth in the United States. If, as expected, the U.S. economy cools off noticeably in the first half of the year (as a result of the tax increases and spending cuts imposed last July), Canada will inevitably feel some of the dampening effects. Exports certainly will not enjoy the same rate of growth as in 1968, but much of this is due to the special circumstances which existed last year. Hopefully they will reach the anticipated level of average gain of ten per cent, although the extent of cooling in the United States will determine whether this goal is reached. Furthermore, if this cooling persists for any length of time, it could affect the growth of Ontario's manufacturing.

These cautionary words may yet prove unnecessary. The U.S. economy has continued to display great strength much to the surprise of those who have been predicting downturns since late last summer. In the light of the mounting exemptions to U.S. government spending cuts, which has the effect of easing any dampening in the economy, it would appear likely that the cooling will take place but will not be severe enough to cause considerable disruption. In any event any cooling that might take place to ease the serious inflationary conditions in the U.S. may give way to higher growth rates at mid-1969. This is conditional on whether or

not the Revenue and Expenditure Control Act of 1968, which is responsible for the cooling, will be allowed to automatically expire at that time.

Even with a considerable lessening in U.S. demand, the Canadian and Ontario economies are in sufficiently strong positions to withstand any adverse effects in the first half of the year. Unlike the United States, Canada and Ontario will not experience any substantial inventory liquidation, mainly because this adjustment had been made late in 1967. The year 1969 should also see a repeat of the good gains made in housing construction along with some improvement in investment in machinery and equipment.

In manufacturing it is expected that further improvements in productivity will be recorded in the year ahead with only mild disturbances in the first half if the U.S. economy decelerates to any substantial degree. Consumer spending should continue fairly strongly as incomes once again rise substantially, although there is some question as to the extent that retail sales will be affected by the recent income tax increases.

In general Ontario can look forward to a year of growth similar to that of 1968. Gross Provincial Product is expected to rise to \$28.9 billion, a gain of approximately 7.4 per cent, made up of a less inflationary price increase of 3.2 per cent and real growth of roughly 4.2 per cent. This broadly based strength in the economy should therefore produce another year of prosperity for Ontario.

<sup>1</sup>Based on 1949 = 100



# Preliminary Population Projections for Ontario,

4

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## 1971-1991

Population and estimates of future population provide a basis for the formulation of both public and private policy. Information is therefore essential not only on the present size and composition but also on the anticipated size, growth rate, age and sex distribution of the provincial population in order to facilitate economic and social planning.

An accurate estimate of anticipated labour supply is required by the government to ensure the provision of adequate employment opportunities in the future and to assure optimum utilization of available natural resources. Information on the projected size, composition and distribution of the population is necessary to estimate the future demand for educational institutions, transportation and recreation facilities, medical and health services, water supply, sewage disposal and housing. Estimates of the availability and location of labour supply are essential to the private business sector in formulating long-term expansion programs. In addition, the future level of demand for goods and services is dependent upon the anticipated size and composition of the population in conjunction with purchasing power.

### Historical Trends

Since the turn of the century Ontario's population has registered nearly a three-fold increase. The average annual rate of increase of 1.5 per cent during the period 1901-1931 fell to 1.0 per cent in the thirties, but rose to 2.0 per cent in 1941-51 and to over 3.0 per cent in 1951-61 before falling to 2.2 per cent in 1961-66. In comparison to the national average for Canada, the rate of growth of population in Ontario remained below that figure in the first quarter of this century, surpassed the national average in the second quarter and has continued to exceed the national average in the third quarter.

Scrutiny of the components of population growth in Ontario shows that roughly two-thirds of that growth may be traced to natural increase (the net balance of births over deaths) and one-third to net migration (immigration minus emigration).

### Projections in the Past

Population projections for Ontario have been prepared previously in 1957<sup>1</sup> and in 1963<sup>2</sup>. The 1963 projection was based on the 1961 census and covered a period of 25 years to 1986. Both reports contained projections for the ten economic regions, counties and principal urban centres of Ontario. In addition

to population projections, the 1963 report included estimates of anticipated labour force. The "component method" was used in the preparation of both these projections.

Let us briefly consider the previous projections made for Ontario in the light of actual population data now available. The 1957 projection forecast 6,249,000 and 6,990,000 people as the likely population of Ontario for 1961 and 1966 respectively. The actual figures for these years were reported as 6,236,000 and 6,961,000. The 1963 projection arrived at a figure of 6,854,000 for 1966 on the assumption of 12,000 annual net migration per annum and a figure of 6,974,000 on the assumption of 36,000 net migration per annum.

The closeness of the projected and actual figures of population should be seen in the light of two factors: First, the comparison between the projected and actual population figures has been only for a relatively short period of time. Second, the components of population growth such as natural increase and migration might move in directions other than anticipated and such movements could cancel errors which would otherwise have appeared. Such a phenomenon did occur in the period 1961-66 when natural increase turned out to be less than expected but this deficiency was compensated for by a greater than anticipated migration, resulting in a total figure very close to the projection.

### Assumptions

As with any forecast, population projections must be considered in the light of the assumptions on which they are based. Some of these assumptions are of a general nature regarding the economic, political and social conditions likely to prevail in the area during the period for which the projections are made. Usually, all population projections assume that no major wars, catastrophes or serious economic depressions will occur during the period. Excepting minor business cycles, an uninterrupted high level of economic activity is assumed throughout the period of the projection. In addition, assumptions of a more specific nature pertaining to the future behaviour of the demographic variables of fertility, mortality and migration are made.

### Fertility

Fertility, the most important demographic variable in the context of population projections, is also the most difficult when making assumptions. As observed by the United

States Bureau of the Census: "of the components of population change, the fertility component is the one with the highest degree of uncertainty in determining the population for future years."<sup>3</sup> This becomes clear by a cursory examination of the fertility variable in the past.

The crude birth rate<sup>4</sup> for Ontario for the period 1921-25 stood at 23.7, from there it fell to 17.5 in 1936-40, then rose to 26.8 in 1957 before falling again to 17.8 in 1967. "Total fertility rate"<sup>5</sup> rose from 2,648 in 1931 to 3,714 in 1957 and then declined to 2,787 in 1966. This decline in fertility during the last decade occurred in spite of a lowering in the average age at first marriage of women from 23.7 in 1951 to 22.5 in 1965. The percentage of married women in the age group 20-24 and 25-34, the crucial age groups for fertility, rose to 65.3 per cent and 88.5 per cent respectively in the 1960's as compared to 57.2 and 83.9 in 1951. Furthermore, between 1961 and 1966 the number of first marriages for females increased by 23.6 per cent.

However, all these factors have not been instrumental in raising the level of the crude birth rate as expected. Instead, the crude birth rate, as was the case with the age-specific fertility rate,<sup>6</sup> has further declined. The decline in both the crude birth rate and age specific fertility rate in the light of the information on the rate of and age at marriage makes abundantly clear that the cause of the fertility decline could not be traced to a change in marriage rates or age at marriage. Fertility is being controlled within the institution of marriage. Moreover, it is anticipated that the social, economic and psychological pressures that motivate married couples to limit their families are likely to continue unabated for some time.

A further decline in fertility cannot be ruled out in view of the increasing number of years spent by young women in educational institutions, increasing urbanization, greater work experience and higher female labour force participation rates. Moreover, when the high and increasing cost of bearing and rearing children may be avoided by the effectiveness of oral contraception and the anticipated introduction of more liberal abortion laws, additional family limitation may be expected. The gap between the rising level of expectations resulting from the influence of the communications media and realization of these expectations (in an economy where suitable jobs for many young

<sup>1</sup>Province of Ontario, Department of Economics, Population Projections For the Economic Regions, Counties and Urban Areas of Ontario, 1963.

<sup>2</sup>Government of Ontario, Department of Economics and Development, Population and Labour Force Projections For Economic Regions of Ontario, 1961-1986.

<sup>3</sup>U.S. Bureau of the Census, Projections of the Population of the United States by age, sex and color to 1990 with extensions of population by age and sex to 2015, *Population Estimates*, p. 18.



persons entering the labour force in the next few years may be in short supply), may also motivate young couples to postpone family formation or to restrict its size. Therefore in the light of the recent decline in fertility three assumptions are made regarding the probable course of fertility trends. All of them assume a further decline in fertility, but at different rates:

(A) Age-specific fertility rates, except for the age group 15-19, will remain at 1966 levels till 1971 and then will decline till 1991 at rates ranging between one and three per cent per annum for the different age groups. A decline in age-specific fertility rate for the 15-19 age group is believed to have commenced in 1967. The corresponding decline in total fertility rate will be from 2,787 in 1966 to 1,397 in 1991, a decline of 49.9 per cent.

(B) Age-specific fertility rates for various age groups will decline by three to five per cent per annum till 1971 and then will remain constant for the next 20 years. In terms of total fertility rate, the decline will be from 2,787 in 1966 to 2,156 in 1971 where it will remain stable till 1991, a decline of 22.6 per cent.

(C) Age-specific fertility rates for all age groups will fall by three per cent in 1967 and thereafter will remain unchanged. The total fertility rate would be stabilized in 1967 at the level of 2,704.

### Mortality

Mortality rates in Ontario have registered significant declines in the twentieth century. This has been particularly evident for the 0-4 age group whose mortality rate dropped from 24.8 in 1921-25 to 5.1 in 1961-66. The mortality rate for the 5-14 age group in 1961-66 was 20 per cent less than in 1921-25. During the same period the mortality rate for the 15-39 age group was reduced by one-third. The decline in the mortality rate for older age groups has also been significant, though not as great as the reduction for the younger age groups.

The main causes of death in the higher age groups are diseases of the circulatory systems, malignant neoplasms, diseases of the nervous system and accidents. However, despite recent medical advances such as successful transplants of vital organs the mortality rate for those in this age group is unlikely to register any significant decline in the near future.

Since mortality rates have shown a definite downward trend in the past, it is less difficult to make plausible assumptions on the expected behaviour of mortality than on fertility. On the basis of the historical over-all trends, the expected decline in mortality rates during the period 1966-1991 for various age groups can be classified as follows:

(a) Age groups 0-1, 1-2 and 2-3: 25-34 per cent

(b) Age groups 3-4, 35-39 and 40-44: 15-24 per cent

(c) Age groups 25-29, 30-34, 45-49, 50-54, 55-59, 60-64, 80-85 and 85 plus: 5-14 per cent.

(d) Age groups 5-9, 10-14, 15-19, 20-24, 65-69, 70-74 and 75-79: 0-4 per cent.

### Migration

Migration, international as well as internal, has been a significant factor influencing Ontario's population growth. Migration accounted for 43 per cent of the population increase in Ontario during the period 1961-65. Since 1949 over 50 per cent of all immigrants arriving in Canada gave Ontario as their province of destination.

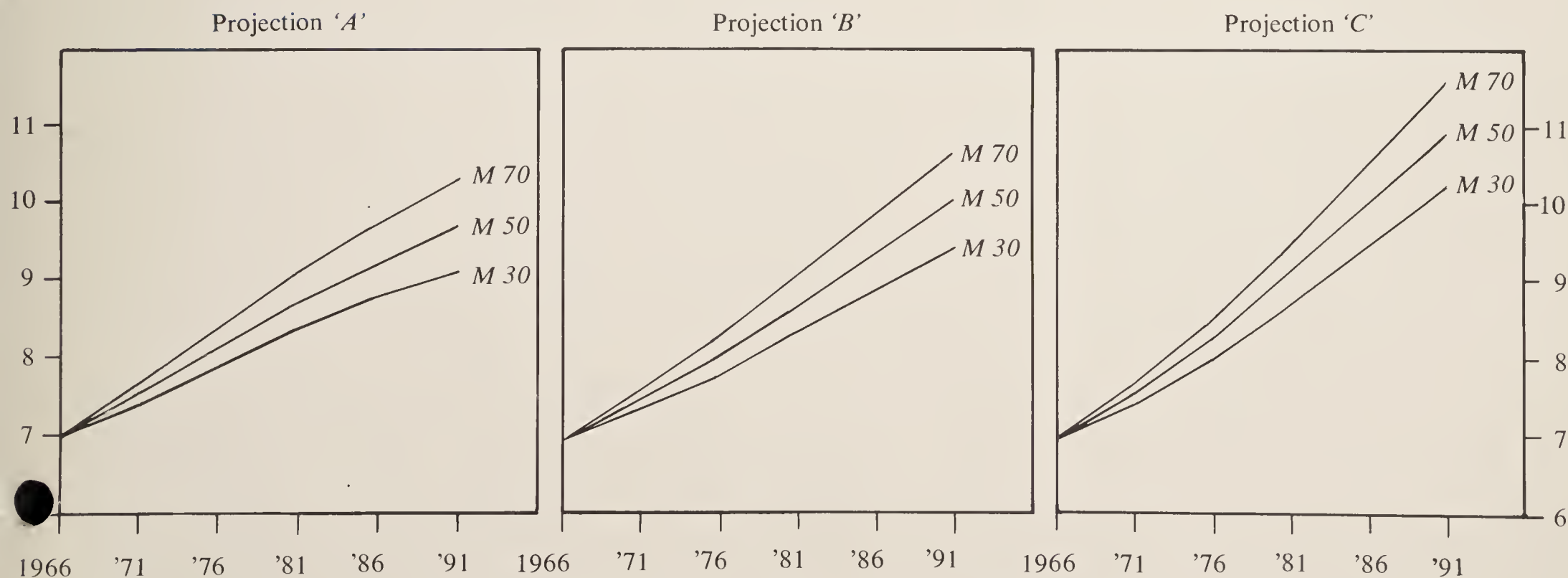
Inter-provincial migration estimates are much more difficult to obtain since no record is made of provincial border crossings. However during the intercensal years between 1951 and 1961, net internal migration to Ontario from other provinces has been estimated at over 12,000 per annum.

During the intercensal period of 1961 to 1966 average annual net migration, including both international and internal migration to Ontario has been 48,000 as compared to an annual average of over 62,000 for the intercensal period 1956-61.

In order to make assumptions regarding the future level of international migration, one has to take into account the joint impact of the forces of "push" on the immigrant from

## Ontario Population Levels, 1971 - 1991

Millions



<sup>4</sup>Crude birth rate — number of births per thousand of total population.

<sup>5</sup>Total fertility rate — number of births which 1,000 women would have throughout their lifetime, assuming no mortality, if they experienced at each age the fertility in effect during the period concerned.

<sup>6</sup>Age-specific fertility rate — number of births occurring in a specific age-group per 1,000 women in that age-group.



the home country and of “pull” from the host country. These forces are dependent upon the economic, social and political conditions existing in Ontario and Canada as well as in the countries from which immigrants are drawn. Needless to say, it would be difficult to forecast the types of changes expected in the countries concerned.

Policies, programs and administrative procedures adopted or likely to be adopted by the Canadian government, the governments of the countries from which the immigrants originate or third countries to which they might go, also influence the rate of net immigration. The tightening of U.S. immigration regulations in particular is expected to slow down the emigration of Canadians to the U.S.A., and thus will raise the level of net migration to Canada and Ontario.

Interprovincial migration depends, primarily, upon the performance of Ontario’s economy in comparison with the economies of other provinces, the age distribution of the population (90% of the net immigration to Ontario from other provinces in the past has been in the age group 5-29) and the efficiency and cost of communication and transportation facilities. All these considerations make migration a difficult variable to forecast. Nevertheless, on the basis of historical figures on net migration and in view of the prevailing economic, political and social conditions in Ontario, Canada and elsewhere, three assumptions may be made regarding the likely annual increments to Ontario’s population through net migration.

- (a) The annual net migration will be 30,000 (*M 30*).
- (b) The annual net migration will be 50,000 (*M 50*).
- (c) The annual net migration will be 70,000 (*M 70*).

The three assumptions each on fertility and migration, along with the single assumption on mortality yield nine sets of projections in all. The assumptions on fertility and migration pertaining to each set of projections may now be reviewed in combination:

1. ‘*A*’ – *M 30*. Total fertility rate will decline from 2,787 in 1966 to 1,397 in 1991 and the annual rate of net migration will be 30,000.
2. ‘*A*’ – *M 50*. Total fertility rate will decline from 2,787 in 1966 to 1,397 in 1991 and the annual rate of net migration will be 50,000.
3. ‘*A*’ – *M 70*. Total fertility rate will decline from 2,787 in 1966 to 1,397 in 1991

and the annual rate of net migration will be 70,000.

4. ‘*B*’ – *M 30*. Total fertility rate will decline from 2,787 in 1966 to 2,156 in 1971 where it will remain stable till 1991 and the annual rate of net migration will be 30,000.
5. ‘*B*’ – *M 50*. Total fertility rate will decline from 2,787 in 1966 to 2,156 in 1971 where it will remain stable till 1991 and the annual rate of net migration will be 50,000.
6. ‘*B*’ – *M 70*. Total fertility rate will decline from 2,787 in 1966 to 2,156 in 1971 where it will remain stable till 1991 and the annual rate of net migration will be 70,000.
7. ‘*C*’ – *M 30*. Total fertility rate will remain unchanged at the 1967 rate of 2,704 and the annual rate of net migration will be 30,000.
8. ‘*C*’ – *M 50*. Total fertility rate will remain unchanged at the 1967 rate of 2,704 and the annual rate of net migration will be 50,000.
9. ‘*C*’ – *M 70*. Total fertility rate will remain unchanged at the 1967 rate of 2,704 and the annual rate of net migration will be 70,000.

Detailed estimates of population by five-year age groups to 1991 are presented in the Appendix. The projections shown here are based on migration assumptions of 50,000

Population Distribution by Specific Age Groups, Ontario 1966

Groups	Number	Per Cent
0–14	2,204,075	31.7
15–64	4,189,073	60.2
65+	567,722	8.1
	6,960,870	100.0

per annum (the medium assumption) and 70,000 per annum (the most optimistic assumption).

Methodology

The “component method” has been used in the preparation of these projections. This method treats each component of population change such as fertility, mortality and migration separately and the resulting population figures are then aggregated.

The method has been used in four stages. Stage one consists of selecting a benchmark or base population year. Since the 1966 census provides detailed data on Ontario’s population by sex and age, 1966 has been used as the benchmark year.

Next, projected survival rates by age groups and sex are applied to the base year population for successive years and the survival

Projected Population Distribution by Specific Age Groups, Ontario 1991

Age Groups	‘ <i>A</i> ’ – <i>M 30</i>		‘ <i>A</i> ’ – <i>M 50</i>		‘ <i>A</i> ’ – <i>M 70</i>	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
0–14	1,854,500	20.3	1,993,000	20.5	2,131,300	20.6
15–64	6,286,700	68.8	6,724,100	69.0	7,162,200	69.3
65+	1,001,100	11.0	1,023,600	10.5	1,045,700	10.1
Total	9,142,300	100.0	9,740,700	100.0	10,339,200	100.0

Age Groups	‘ <i>B</i> ’ – <i>M 30</i>		‘ <i>B</i> ’ – <i>M 50</i>		‘ <i>B</i> ’ – <i>M 70</i>	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
0–14	2,293,800	24.1	2,457,600	24.2	2,621,200	24.3
15–64	6,229,600	65.4	6,666,100	65.7	7,102,500	66.0
65+	1,001,100	10.5	1,023,300	10.1	1,045,800	9.7
Total	9,524,500	100.0	10,147,000	100.0	10,769,500	100.0

Age Groups	‘ <i>C</i> ’ – <i>M 30</i>		‘ <i>C</i> ’ – <i>M 50</i>		‘ <i>C</i> ’ – <i>M 70</i>	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
0–14	2,878,500	27.9	3,073,600	28.0	3,268,800	28.1
15–64	6,427,300	62.4	6,869,600	62.6	7,311,800	62.9
65+	1,001,100	9.7	1,023,400	9.3	1,045,700	9.0
Total	10,306,900	100.0	10,966,600	100.0	11,626,300	100.0



### Percentage Increase of Women in 20 - 24 Age Group for Specified Years

	1971	1976	1981	1986	1991
Most optimistic ('C' — M 70)	31.1	52.7	74.5	74.4	64.1
Medium ('B' — M 50)	28.0	48.8	68.4	66.6	43.9
3. Most pessimistic ('A' — M 30)	24.9	44.1	62.3	58.7	38.8

Base year, 1966.

population at the end of the required period is summed up into the appropriate age groups.

At the third stage, the fertility factor is introduced. Projected age-specific fertility rates are applied to the appropriate age groups to obtain the number of births in each year which are then subjected to specific survival rates.

Finally, the migration element is introduced. Fertility and survival rates are applied to the net migration figure and the net migration as well as natural increase from migration is added to the population by age groups.

#### Implications of Age Distribution

The age distribution of the population, which is of immediate importance to various agencies using population forecasts, would vary according to the set of assumptions used.

If we assume that the medium assumption ('B' — M 50) is the most plausible, the age group 0-14 which consists mostly of school-age population will fall to 24.2 per cent of the total population in 1991 as compared to 31.7 per cent in 1966. The 65-plus age group would consist of 10.1 per cent of the 1991 population as compared to 8.1 per cent in

1966. The dependants in the population will decrease from the 1966 percentage of 39.8 to 34.3 in 1991. The population in the working age group 15-64 will increase from 60.2 per cent to 65.7 per cent. The implications of using the various assumptions on age distribution can be seen from the tabulations on page 6.

By 1991 the 0-14 age group will have increased by only 11.5 per cent from the 1966 level, while the 65-plus age group will show an increase of 80.3 per cent if the medium assumption is used. The 15-64 age group in 1991 will have increased by 59.1 per cent over 1966.

If the combination of most "optimistic" assumptions is used ('C' — M 70) the 0-14 age group will rise by 32.6 per cent in the 25-year period 1966-1991, the 15-64 age group by 74.5 per cent and the 65-plus age group by 84.2 per cent. On the other hand if the most "pessimistic" combination of assumptions is used ('A' — M 30) the 0-14 age group will decrease by 15.9 per cent, the 15-64 age group will increase by 50.7 per cent and the 65-plus age group by 76.3 per cent during the same period.

Since the median age at marriage for women in Ontario during the period 1960-65 was 21, the age group 20-24 would be of special interest for studying the implications of family formation on the economy. This age group will strongly influence the demand for living accommodation, the expenditure on household appliances and other durable goods. The accompanying table shows the expected increase over 1966 during the period 1971-1991 under various assumptions. The peak level of population in this age group under all the assumptions above will be reached in 1981.

#### Limitations

The value of population projections is in the guidelines they provide for both the formulation of government policy and the private decision-making process. Because of the assumptions on which they are based the accuracy of the estimates is necessarily approximate. The assumptions are made at a particular moment in time and therefore may be unduly influenced by the demographic, economic, social and political conditions that have existed in the past and prevail at present. A population projection for Canada in 1939 assumed that Canadian fertility would continue to decline and that net migration is not likely to add significantly to the total population of Canada. Consequently the projection yielded a population of 15,401,000 for 1971 and 20,720,000 for 2300. However, Canadian population reached the 15-million mark as early as 1954 and the 20-million mark in 1967.



Ontario: Population Projections by Five-Year Age Groups, 1971-1991

Net Migration 50,000 Per Annum

Age Group	1971			1976			1981			1986			1991		
	Fertility Assumption			Fertility Assumption			Fertility Assumption			Fertility Assumption			Fertility Assumption		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
Thousands															
0—4	655.5	628.8	679.0	667.7	635.3	791.7	679.0	739.4	922.2	659.1	820.2	1,026.5	601.2	846.0	1,075.7
5—9	764.0	764.0	764.0	673.7	647.3	696.9	686.0	653.8	808.8	697.7	757.5	939.1	678.1	838.2	1,043.2
10—14	786.0	786.0	786.0	779.9	779.9	779.9	689.9	663.5	713.0	702.1	670.0	824.9	713.7	773.4	954.7
15—19	705.6	705.6	705.6	803.1	803.1	803.1	797.0	797.0	797.0	707.3	681.0	730.3	719.4	687.5	841.9
20—24	632.1	632.1	632.1	738.2	738.2	738.1	835.1	835.2	835.1	829.1	829.1	829.1	739.7	713.6	762.7
25—29	525.2	525.2	525.2	671.6	671.6	671.5	776.9	777.0	777.0	873.5	873.6	873.5	867.6	867.6	867.6
30—34	463.6	463.6	463.6	554.5	554.5	554.5	700.3	700.2	700.2	805.3	805.3	805.3	901.4	901.5	901.4
35—39	465.1	465.1	465.1	481.6	481.5	481.6	572.1	572.1	572.4	717.0	717.0	717.0	821.7	821.7	821.7
40—44	481.3	481.2	481.2	474.1	474.1	474.1	490.7	490.6	490.6	580.5	580.5	580.5	724.3	724.3	724.3
45—49	469.7	469.7	469.7	481.5	481.6	481.7	474.7	474.7	474.6	491.3	491.3	491.3	580.1	580.1	580.1
50—54	385.9	385.9	385.9	462.6	462.6	462.6	474.4	474.3	474.4	468.0	468.0	468.0	484.6	484.6	484.6
55—59	342.3	342.3	342.3	373.9	373.9	373.9	447.6	447.6	447.6	458.9	458.9	458.9	453.1	453.1	453.1
60—64	276.7	276.7	276.7	322.5	322.5	322.5	352.5	352.6	352.5	421.5	421.5	421.5	432.2	432.1	432.2
65—69	221.1	221.1	221.1	250.5	250.5	250.4	292.0	291.9	291.9	319.6	319.6	319.6	382.0	381.9	382.0
70—74	170.1	170.1	170.1	188.6	188.7	188.7	213.9	214.0	214.0	249.4	249.4	249.4	274.0	273.8	273.8
75—79	122.3	122.3	122.3	131.1	131.1	131.1	145.7	145.7	145.7	165.5	165.5	165.5	193.4	193.4	193.4
80—84	70.3	70.3	70.3	79.9	79.9	79.9	86.1	86.1	86.1	96.1	96.1	96.1	109.7	109.7	109.7
85—89	28.7	28.7	28.7	32.6	32.6	32.5	37.5	37.5	37.5	40.7	40.8	40.7	45.8	45.8	45.8
90+	11.5	11.5	11.5	12.5	12.5	12.5	14.2	14.2	14.2	16.6	16.6	16.6	18.7	18.7	18.7
Total	7,577.0	7,550.2	7,600.4	8,180.1	8,121.4	8,327.2	8,765.6	8,767.4	9,154.8	9,299.2	9,461.9	10,053.8	9,740.7	10,147.0	10,966.6



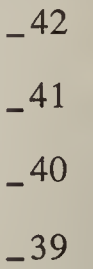
# Ontario: Population Projections by Five-Year Age Groups, 1971-1991

## Net Migration 70,000 Per Annum

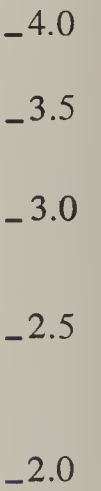
Age Group	1971			1976			1981			1986			1991		
	Fertility Assumption			Fertility Assumption			Fertility Assumption			Fertility Assumption			Fertility Assumption		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
Thousands															
0—4	668.3	641.1	692.1	693.6	660.5	821.6	713.0	775.8	966.6	697.4	866.7	1,083.2	642.5	902.1	1,145.2
5—9	773.0	773.0	773.0	695.4	668.6	718.9	720.9	687.8	847.8	740.5	802.8	992.3	725.3	893.4	1,108.8
10—14	793.0	793.1	793.1	796.0	796.0	796.0	718.6	691.7	742.1	744.1	711.0	870.6	763.5	825.7	1,014.8
15—19	713.4	713.4	713.4	817.9	817.7	817.9	820.5	820.8	820.7	743.6	716.8	767.0	769.0	736.0	895.2
20—24	646.4	646.4	646.4	760.0	760.0	760.0	864.1	864.1	864.1	867.0	867.0	867.0	790.1	763.5	813.5
25—29	542.2	542.1	542.2	702.7	702.7	702.7	815.8	815.8	815.8	919.4	919.3	919.3	922.2	922.2	922.2
30—34	476.4	476.4	476.4	584.2	584.2	584.2	744.1	744.1	744.1	856.6	856.6	856.7	959.8	959.8	959.8
35—39	473.4	473.5	473.5	502.6	502.6	502.6	609.9	609.9	609.9	768.9	768.9	768.9	881.1	881.1	881.1
40—44	486.6	486.6	486.6	487.7	487.7	487.7	516.7	516.7	516.7	623.4	623.4	623.4	781.2	781.2	781.2
45—49	472.9	472.9	472.9	490.1	490.1	490.1	491.4	491.4	491.4	520.3	520.3	520.3	625.7	625.7	625.7
50—54	388.2	388.2	388.1	468.1	468.1	468.1	485.0	485.0	485.0	486.5	486.5	486.5	515.2	515.2	515.2
55—59	344.3	344.3	344.3	378.1	378.1	378.1	454.8	454.8	454.8	471.1	471.1	471.1	472.8	472.8	472.9
60—64	278.2	278.2	278.2	326.0	326.0	326.0	385.1	358.1	358.1	429.9	429.9	429.9	445.1	445.0	445.0
65—69	222.4	222.3	222.4	253.2	253.2	253.2	296.3	296.3	296.3	325.8	325.7	325.8	390.7	390.7	390.7
70—74	171.2	171.2	171.2	190.9	190.9	190.9	217.5	217.4	217.4	254.0	254.3	254.3	280.2	280.2	280.2
75—79	122.7	122.7	122.7	132.5	132.5	132.4	147.9	147.8	147.8	168.6	168.6	168.6	197.6	197.7	197.6
80—84	70.3	70.3	70.3	80.1	80.1	80.1	86.9	86.9	86.9	97.5	97.5	97.5	111.8	111.8	111.8
85—89	28.7	28.7	28.7	32.5	32.5	32.5	37.6	37.6	37.6	41.2	41.2	41.2	46.5	46.5	46.5
90+	11.5	11.5	11.5	12.5	12.5	12.5	14.2	14.2	14.2	16.6	16.6	16.6	18.9	18.9	18.9
<b>Total</b>	7,683.1	7,655.9	7,707.0	8,404.1	8,344.0	8,555.5	9,113.3	9,116.2	9,517.3	9,772.4	9,944.2	10,560.2	10,339.2	10,769.5	11,626.3



## Scale A



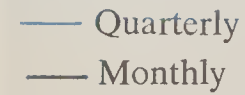
## Scale 11



## Scale

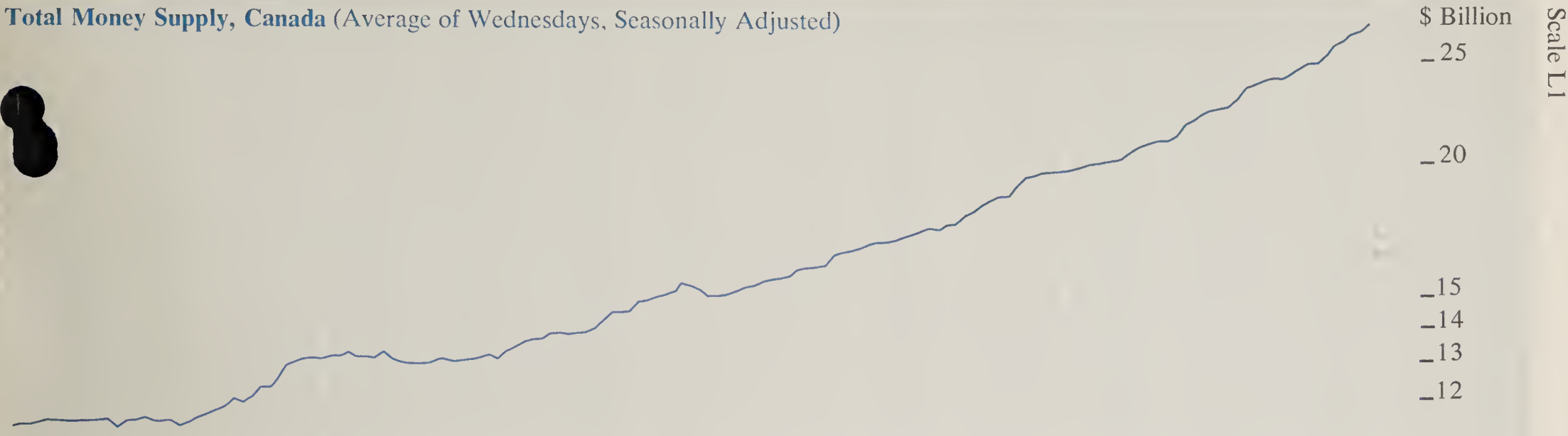


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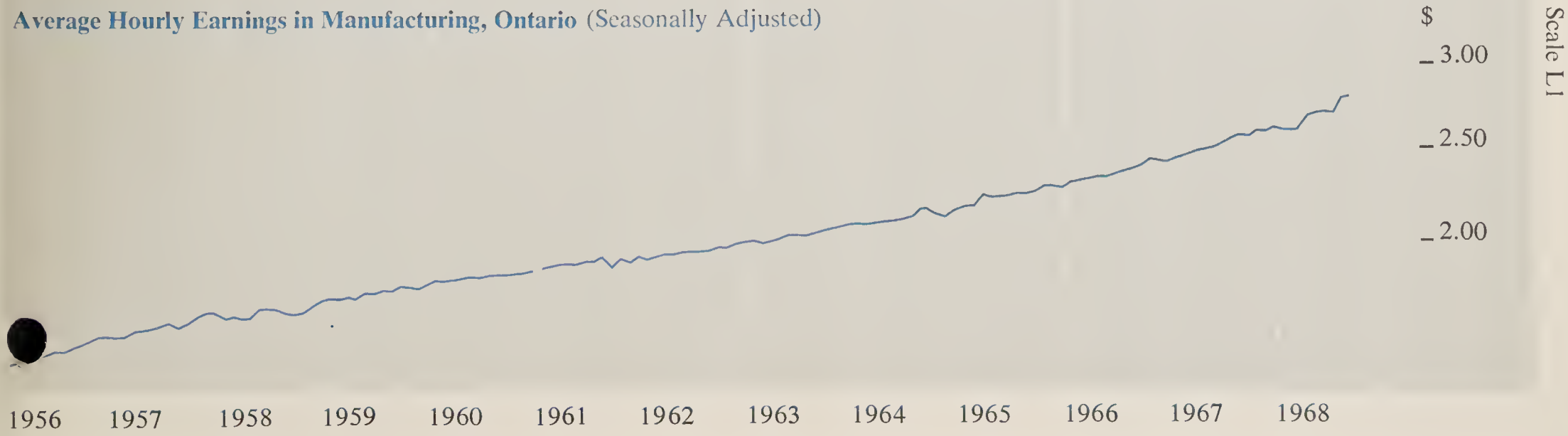
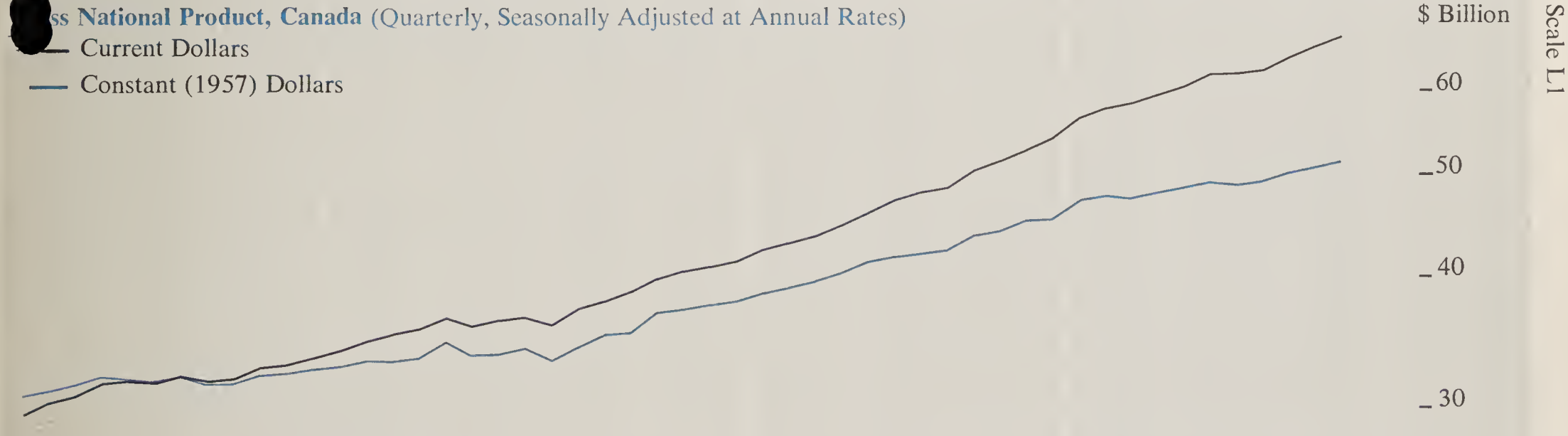
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# Leading Indicators

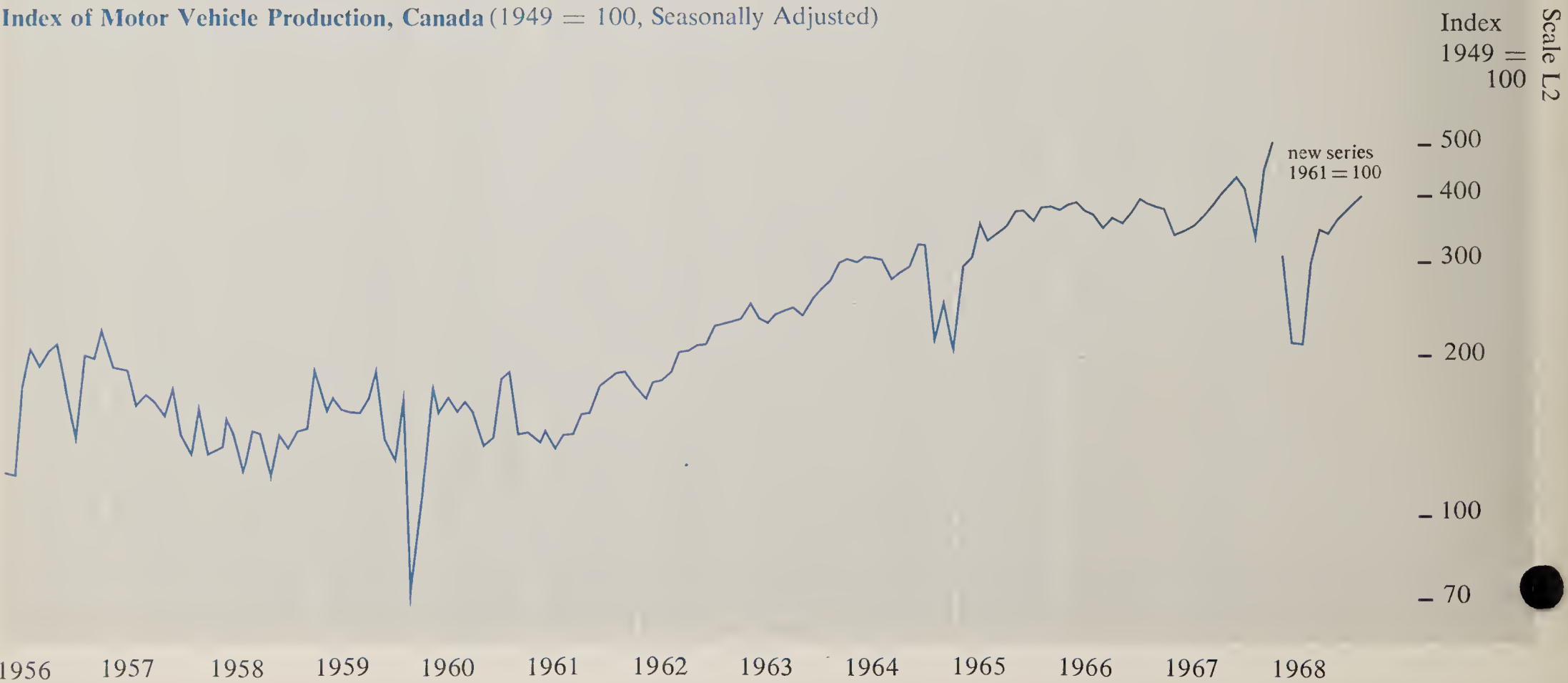
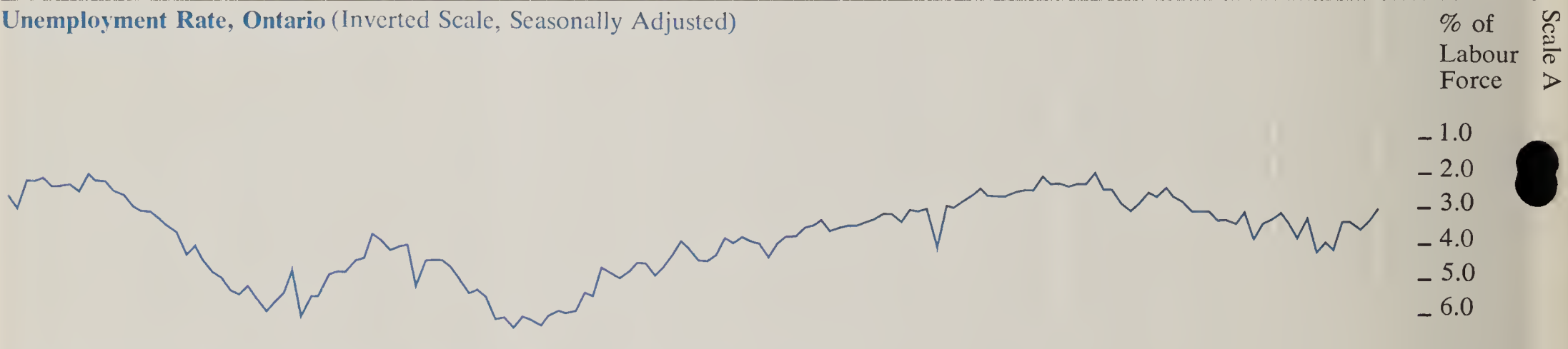
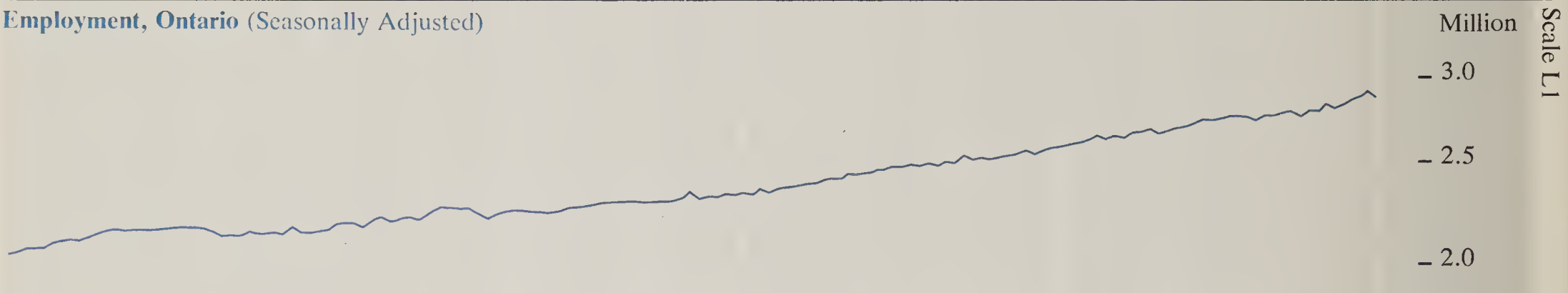
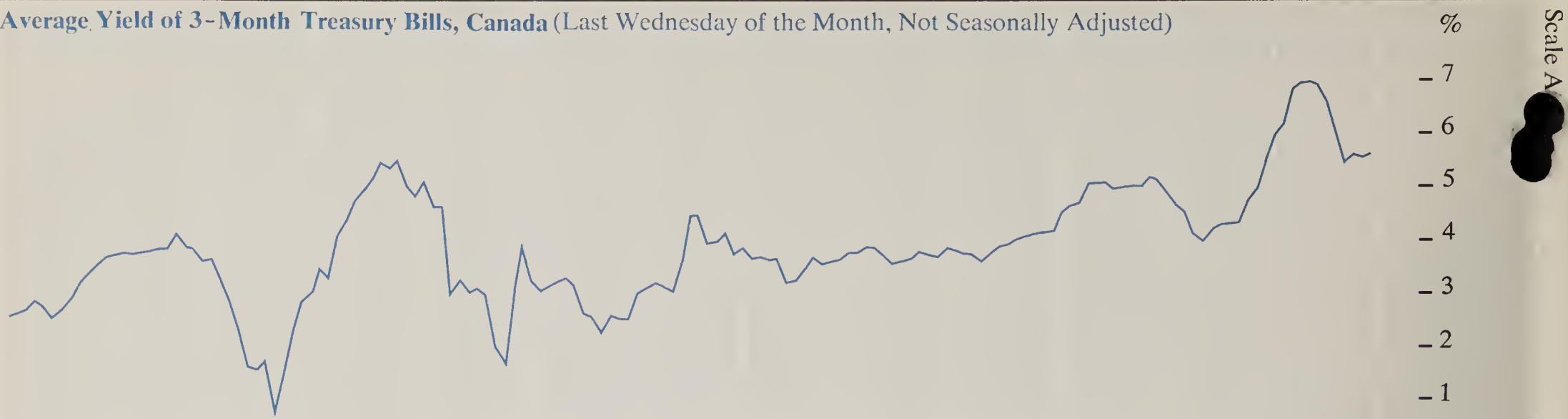


# Coincidental and Lagging Indicators





# Coincidental and Lagging Indicators



# Economic Indicators

13

Seasonally Adjusted

		1967		1968											
		Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Lagging Indicators															
Average Weekly Hours Worked in Manufacturing	Number	40.4	40.9	39.9	40.5	39.6	40.6	40.7	40.3	40.3	40.2	40.6			
New Orders in Manufacturing Industries <sup>c</sup>	\$ Million	3,242	3,382	3,225	3,163	3,193	3,280	3,365	3,356	3,404	3,420	3,601	3,544		
Business, Industrial and Engineering Construction Contracts	\$ Million	133.0	125.4	105.4	111.3	104.6	107.1	123.4	129.3	97.7	101.8	107.8	154.4	125.0	
Urban Housing Starts (Annual Rate)	Number	61,000	58,700	76,600	72,700	79,400	69,200	63,200	60,800	61,900	63,900	48,900	73,400	83,500	69,325
Money Supply <sup>c</sup>	\$ Million	24,041	24,147	24,149	24,479	24,682	24,972	24,987	25,400	25,846	26,314	26,702	26,827	27,226	
T.S.E. Industrial Index <sup>u</sup>	1956 = 100	161.60	162.28	157.43	150.24	146.88	160.43	157.87	166.61	165.93	169.02	176.37	179.61	187.29	188.93
Business Failures <sup>u</sup>	Number	43	73	54	59	87	52	50	46	49	28	36	46	48	
Business Failures – Liabilities <sup>u</sup>	\$ Million	2.9	24.3	2.6	1.8	5.6	6.4	2.8	6.6	2.9	1.3	1.5	2.1	2.5	
Coincidental and Lagging Indicators															
Gross National Product <sup>c</sup> (Annual Rate)	\$ Million		62,992			65,088			66,288			67,628			
Average Hourly Earnings in Manufacturing	Dollars	2.58	2.60	2.59	2.58	2.60	2.67	2.68	2.69	2.68	2.77	2.79			
3-Month Treasury Bill Rate <sup>c,u</sup>	Per Cent	5.46	5.95	6.29	6.80	6.98	6.99	6.95	6.56	6.03	5.48	5.66	5.57	5.66	
Cheques Cashed in Clearing Centres <sup>1</sup>	\$ Million	5,459	5,485	5,006	4,959	5,313	5,031	5,448	5,199	5,381	6,034	5,065	5,821		
Retail Trade	\$ Million	773	767	803	768	780	785	779	804	840	835	850	851		
Labour Force	000's	2,860	2,856	2,857	2,892	2,869	2,890	2,918	2,962	2,948	2,937	2,959	3,002	3,026	2,955
Employed	000's	2,764	2,762	2,769	2,793	2,760	2,796	2,796	2,844	2,825	2,837	2,858	2,890	2,923	2,865
Unemployed	000's	96	94	88	99	109	94	122	118	123	100	101	112	103	90
Unemployed as % of Labour Force	Per Cent	3.4	3.3	3.1	3.4	3.8	3.3	4.2	4.0	4.2	3.4	3.4	3.7	3.4	3.0
Wages and Salaries	\$ Million	1,086	1,094	1,111	1,103	1,107	1,130	1,141	1,141	1,142	1,157	1,182			
Index of Industrial Employment	1961 = 100	125.7	125.8	126.1	124.3	125.9	125.6	124.5	123.7	125.6	127.0				
Index of Industrial Production <sup>c</sup>	1961 = 100	154.5	156.8	153.8	153.9	154.9	156.8	158.4	160.1	159.5	159.3	161.4	163.0	164.7	
Total Manufacturing <sup>c</sup>		153.9	156.6	153.0	152.2	154.0	156.4	158.1	159.7	157.8	158.0	161.3	162.5	164.6	
Non-Durables <sup>c</sup>		139.3	140.1	138.8	141.9	145.7	143.5	142.8	146.1	142.1	139.8	142.8	144.0	147.4	
Durables <sup>c</sup>		171.8	176.7	170.4	164.8	164.2	172.2	176.8	176.2	177.0	180.2	183.9	185.1	185.7	
Mining <sup>c</sup>		150.8	152.2	145.8	152.8	152.4	153.3	153.1	154.6	156.1	154.3	152.9	155.1	155.1	
Electric Power and Gas Utilities <sup>c</sup>		165.4	165.5	172.9	170.0	166.6	165.7	169.1	172.1	179.9	179.0	177.5	179.6	179.7	
Primary Energy Demand (Annual Rate)	BKWH	53.86	53.78	55.60	55.15	54.01	53.94	53.81	53.83	55.92	55.69	54.83	57.09	57.89	
Exports (including re-exports) <sup>c</sup>	\$ Million	969.4	1,023.0	1,077.7	1,140.4	1,125.7	1,165.3	1,097.2	1,115.9	1,063.5	1,103.5	1,115.0	1,176.4		
Imports <sup>c</sup>	\$ Million	882.5	928.7	974.5	1,093.9	970.9	1,026.6	992.2	962.7	927.3	963.0	1,092.1	1,127.2		
Unclassified Indicators															
Foreign Exchange Reserves <sup>c,u</sup>	U.S. \$ Million	2,277	2,268	2,175	2,490	2,244	2,416	2,695	2,574	2,515	2,590	2,534	2,525	2,672	
Industrial Materials Price Index <sup>c,u</sup>	1935-39 = 100	252.9	254.3	253.5	252.4	253.0	251.2	252.0	253.0	253.4	254.2	253.4	256.8	257.1	260.8
Consumer Price Index <sup>c,u</sup>	1949 = 100	151.0	151.8	152.6	152.7	153.2	154.1	154.2	154.7	155.6	156.0	156.4	156.8	157.5	158.0

<sup>c</sup>Statistics for Canada.

<sup>u</sup>Not seasonally adjusted.

<sup>1</sup>Ontario less Toronto.



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# Ontario Economic Review

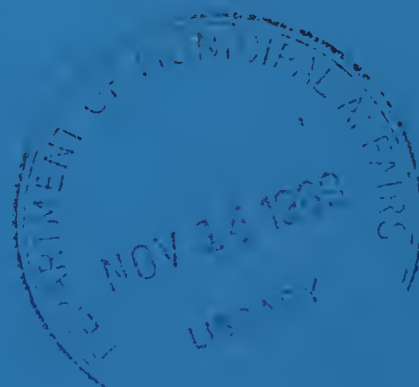
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Mar/Apr 1969  
Volume 7, Number 2

Department of Treasury and Economics

Hon. Charles S. MacNaughton, Treasurer of Ontario  
and Minister of Economics

H. Ian Macdonald, Deputy Minister



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# Ontario Economic Review

March/April 1969  
Volume 7, Number 2

## The Ontario Economy

## The Solemnization of an Institutional Marriage

(or the joining of the "Treasury" with "Economics")

H. Ian Macdonald, Deputy Treasurer of Ontario  
and Deputy Minister of Economics

## Selected Economic Indicators

A publication of the  
Department of Treasury  
and Economics  
Government of Ontario

Hon. Charles S. MacNaughton  
*Treasurer of Ontario and  
Minister of Economics*  
H. Ian Macdonald  
*Deputy Minister*

The *Ontario Economic Review* is prepared and edited bimonthly in the Economic Analysis Branch of the Economic and Statistical Services Division, Department of Treasury and Economics. The review presents articles of interest as well as current information on economic activity in Ontario. Signed articles reflect the opinions of their authors and do not necessarily represent the views of the Department.

Subscriptions can be obtained free of charge by writing the Editor, *Ontario Economic Review*, Department of Treasury and Economics, Frost Building, Queen's Park, Toronto 5, Ontario.

### About the Review

The March/April edition of the *Ontario Economic Review* presents an article by H. Ian Macdonald, Deputy Treasurer of Ontario and Deputy Minister of Economics, on the reorganization of the Treasury Department in the Ontario Government.

On July 23, 1968, legislation creating two new departments — the Department of Treasury and Economics and the Department of Revenue — was proclaimed. These two departments separate the taxation policy and taxation administration functions of the former Treasury Department, following a recommendation of the Ontario Committee on Taxation. The separation has resulted in a finance department with varied policy and operating responsibilities.

In this article, Mr. Macdonald describes the functions and objectives of the new Department of Treasury and Economics in providing machinery for carrying out the Government's economic and fiscal policy as well as co-ordinating federal-provincial affairs. As the Government's finance department, it will also continue to develop and maintain government-wide accounts, including the overall financial records, to manage and administer the public debt of Ontario, and to propose taxation reforms resulting from evaluation of The Report of the Ontario Committee on Taxation among other sources.

### Indicator Charts, Pages 14-16

Fluctuations in aggregate economic activity — commonly used to define business cycles — do not necessarily correspond with fluctuations in the individual activities which make up the aggregate. Instead different indicators of economic activity may vary with respect to both their rates of growth and the timing of their peaks and troughs: some may grow more rapidly than others, some change direction sooner.

Those activities which tend to assume a direction in advance of the aggregate — because they relate to future rather than present production — are referred to as leading indicators, and are widely used to anticipate the short-run future course of the overall economy. The charts on pages 14-16 in the *Ontario Economic Review* present a number of these leading indicators, as well as several which are coincidental to or lag behind the aggregate, to provide for the reader an opportunity to make such an evaluation.

While comparisons of the timing and direction of general changes in the various indicators can readily be made, great care must be exercised in making such a comparison of the amplitude of fluctuations. Of the three vertical scales used — 'A' (arithmetic) and 'L1' and 'L2' (logarithmic scales with one and two cycles respectively over a given vertical distance) — only the logarithmic scales can be used to compare relative changes in different indicators. *And this applies only when all series being compared are on the same logarithmic scale.* In such a situation all parallel lines represent equal rates of growth, the exact rate of growth being determined by the slope of the line.



Ontario Budget 1969

In his third Budget Statement the Honourable Charles MacNaughton, Treasurer of Ontario and Minister of Economics, announced a balanced budget which proposes to raise \$181.0 million in new taxes and outlined a program of significant tax reform embracing the principal of a capital gains tax and a guaranteed annual income. His 1969 Budget, the first to be televised in Canada's history combined "drastic curtailment" of expenditures and a series of corporation and sales tax changes to achieve an estimated surplus of \$2.0 million for 1969-70.

In an accompanying White Paper entitled Ontario's "Fiscal Framework for the Future", the Treasurer indicated that the self-financing program for 1969-70 is the first essential step to set the stage for long-term reforms of the provincial tax system and deemed necessary until a more acceptable tax sharing arrangement with Ottawa is arranged and until pressure on the bond market and inflationary pressures have subsided.

For the coming fiscal year, Mr. MacNaughton achieved a balanced budget (the first since 1945) by holding expenditures to the \$3.0 billion target he had set earlier this year in launching an austerity program for the provincial government. Provincial expenditures which have risen by more than 20 per cent in each of the three previous years will rise by only 7.5 per cent, considerably less than the federal government's increase of 9.5 per cent and slightly less than the anticipated increase of 7.8 per cent in gross provincial product for 1969.

Total expenditures will be \$2,996 million, compared with last year's \$2,787 million, for an increase of \$209 million. Revenue is expected to total \$2,998 million, a gain of \$478 million over last year's \$2,520 million.

To achieve this degree of restraint the Government has pared \$400 million from allocations requested by the various departments. Of the increase in spending, \$162 million — or approximately three-quarters has been allocated to education, health, social services, and municipal aid, the areas to which the provincial government assigns highest priority. Over the past four years Ontario has progressively shifted more resources into these priority fields, raising their proportion to 71 per cent from 63 per cent of the total budget. Education programs will get the biggest portion of the increase, \$149

million, to raise their total to \$1,276 million. Health and social services will drop by \$12 million but aid to local authorities other than school board grants will rise by \$25 million. The increase in these priority areas will be 8.2 per cent compared with a growth rate of 5.8 per cent for non-priority areas. No new programs have been proposed and a comprehensive review of management structure and operations has been launched to streamline administration.

Predicting a continuation of tight money in North America, Mr. MacNaughton estimated that "capital will be in short supply and interest rates will probably remain at present levels until the latter part of the year when the effects of present policies may have worked to reduce inflationary pressures".

The necessity to combat inflation and build up an appropriate revenue base for long-term reforms persuaded the Treasurer to cover the prospective deficit by raising taxes. The existing tax system would have produced \$2,817 million leaving a budgetary deficit of \$179 million. After taking account of non-budgetary spending and revenues (including borrowing from the Canada Pension Plan), the cash needs totalled \$169 million.

The new taxes will raise \$181 million, producing the budgetary surplus of \$2.0 million and a surplus above cash needs of \$12 million. Corporations and mining companies will provide almost 60 per cent of the additional \$181 million in revenue, the remainder coming from increased levies on alcoholic beverages and cigarettes, the extension of the five per cent retail sales tax to hotel and motel room rates, and removal of refunds on gasoline purchases for boats and snowmobiles.

Ontario will require a speed-up in corporation tax payments to bring its payment schedule more closely in line with the federal government's new schedule. This is a one-time tax source which generates additional income only in the year of implementation and will have to be replaced in the next fiscal year. Corporation capital tax will also increase from 1/20th to 1/10th of one per cent, with a minimum of \$50, but the place-of-business tax will be abolished.

Corporations will also contribute the majority of revenue anticipated from the application of retail sales tax to production machinery now exempt. All equipment, except that used in farm production, will be subject to the present five per cent rate.

These changes affecting corporations, plus an \$8.0 million increase in the mining tax, will raise \$105.7 million of the additional revenues expected from tax changes. A large portion of these new taxes, however, can be written off against corporation income tax.

Retail sales tax on wine, liquor and bottled beer will be increased from 5 per cent to 10 per cent on April 1st to established a differential tax rate which will form part of the reform tax package for the future. This will apply to retail sales and consumption in licensed premises.

The exemption from retail sales tax on prepared meals will be raised from \$1.50 to \$2.50 but the new 10 per cent rate will apply over \$2.50. Amusements now subject to the 10 per cent hospitals tax will be brought under the new 10 per cent sales tax, and the present maximum of \$1.00 tax will disappear.

The tax on cigarettes will rise two cents (from six to eight) per package of 20, but the tax on other tobaccos will remain the same.

**ESTIMATED INCREASE IN REVENUES FROM 1969 TAX CHANGES**

\$ Millions

<b>From corporations and mining companies</b>	
Speed-up of income tax payments . . . .	42.2
Capital tax increase (less abolition of place-of-business tax) . . . . .	17.2
Application of 5% retail sales tax on production machinery . . . . .	38.2
Mining tax increase . . . . .	8.1
Total . . . . .	105.7
<b>From consumer</b>	
Retail Sales Tax	
10% rate on all liquor, wine and bottled beer (both retail sale and consumption); meals over \$2.50; removal of \$1 maximum on entertainment (formerly under hospitals tax) . . . . .	42.2
5% rate on hotel and motel accommodation . . . . .	13.0
5% rate on rental of motion picture films and video tapes . . . . .	2.0
Tobacco tax increase (cigarettes only) . . . . .	16.6
Gasoline tax (removal of rebate on purchases for boats, snowmobiles) . .	1.5
<b>Total . . . . .</b>	<b>75.3</b>
<b>Total Estimated Increase . . . . .</b>	<b>181.0</b>



# The Solemnization of an Institutional Marriage

2

(or the joining of the "Treasury" with "Economics")

H. Ian Macdonald, Deputy Treasurer of Ontario  
and Deputy Minister of Economics

## COURTSHIP . . .

On July 23, 1968, the Lieutenant Governor of Ontario gave Royal Assent to a bill which solemnized the marriage of two well-matched partners — the economics and finance functions of the Ontario Government. The marriage ceremony provided a basis of respectability for a relationship which had assumed varying degrees of propriety within a constant state of intimacy.

The Treasury Department, dating back to July 1st, 1867, had enjoyed a long and distinguished service as the finance department of the Ontario Government. It provided a core of advice and a centre of operations for budgetary policy, tax policy and tax collection, and the management of the public debt and government investments; it also functioned as the main source of government accounts and financial information. Skilful management and high professional standards had combined to produce financial conditions worthy of the Province's enviable credit rating in the capital markets of the world.

However, new dimensions were constantly being added to the requirements for economic and fiscal policy and to the character of Canadian federalism. Throughout the post-Keynesian western world in particular, appreciation of economic influences and sophistication in economic understanding was developing rapidly. Canada was also becoming an increasingly prominent nation in that world and Ontario an increasingly vigorous partner in the Canadian federal system. Just as the increase in the relative role of government evoked more intensive economic research among governments, a contemporary feature of Canadian federalism decreed that developments at the provincial level should be particularly pronounced. The burgeoning of activity in areas assigned constitutionally to the provinces — education, health, welfare and highways, among others — was producing a notable shift in the balance between federal and provincial-municipal activity. Today, approximately 60 per cent of government expenditure in Canada now rests with the provinces and municipalities and over 80 per cent of public capital investment is placed by these two levels of government. In fact, the budget of the Ontario Government is today over five times the size of the federal budget on the eve of World War Two. There can be no escape from the consequences of these facts: a large measure of fiscal policy is now the responsibility of the provinces in general and of Ontario in particular.

In the face of this situation, a skilled economics service became a necessity at a relatively early stage. As a result, "economics" has already enjoyed a distinguished history in the service of the Ontario Government along with a well-implanted tradition of professional standards among the staff. A close alliance of economics with finance also developed at a comparatively early stage, dating back to the establishment of the Bureau of Statistics and Research in 1943. Actually, the matrimonial metaphor being pursued in this article may be somewhat indecent because the Bureau was originally a progeny of the Treasury Department — a departmental branch. This particular branch was expanded into the Office of the Provincial Economist in 1954 and achieved full departmental status with the creation of a Department of Economics in early 1956.

In a sense, this event ushered in a period of common-law marriage, with the Treasury Department and the Department of Economics living within the community of a single Minister — the Treasurer of Ontario. Common-law marriage and co-habitation came to an end in 1961 when the Department of Economics (which for a brief period had been renamed the Department of Economics and Federal-Provincial Relations) was merged with the Department of Commerce and Development to form the Department of Economics and Development. Under the umbrella of this new community, "economics" resided for six years. During the last three years of that period, responsibility for economics, statistics, federal-provincial affairs and the regional development program was concentrated in a new division — the Office of the Chief Economist.

Despite a physical and administrative separation, the intimacy of "economics" and "finance" prevailed. Indeed, how could it have been otherwise? Fiscal policy demands economic guidelines and, in government, the budgetary program is surely the means by which economic policy is translated into action. Certainly, the view that the budget is an instrument of economic policy and that the expenditures program should be directed at the economic and social development of the province was well accepted. The 1966 Budget Statement described the Government's intention to establish clear policy priorities to ensure that expenditures would make the greatest contribution to the development of the province, to plan its financial and economic activity to achieve maximum

effectiveness, to co-ordinate government policies and programs designed to contribute to the economic development of all regions of the province, and to view all policies in the context of federal-provincial-municipal relationships. To serve these and other objectives, a Cabinet Committee on Policy Development was established, under the chairmanship of the Prime Minister, providing policy advice to the Executive Council.

Mutual interest and interdependence flourished throughout this period with the result that association became increasingly great. Finally, on December 15, 1967, the two "good friends" — economics and finance — became officially engaged within the Treasury Department and under the Deputy Provincial Treasurer (Finance and Economics). In the summer of 1967, the Ontario Committee on Taxation had recommended that the Treasury Department should become a centre for fiscal, budgetary, taxation and economic policy with the tax collection and tax administration functions becoming the responsibility of a new Department of Revenue. The traditional period of engagement, until July 23, 1968, provided for this change-over with the result that the Department of Revenue was born at the same time as the Department of Treasury and Economics. "Economics" and "finance" were now duly wedded and have since settled down to renovate the household, modernize the furnishings, amend the functions of some of the household staff, and plan for financial operations appropriate to a multi-billion dollar organization.

In passing, it is worthy of note that this union represents a significant step in public administration. It has been traditional to assume that the "treasury function" and the "economics function" have different conceptual orientation. Whereas the treasury was thought of in terms of keeping firm control over expenditures, raising the necessary financing and "keeping the books" of the government, the economist was more concerned with measures to ensure that the economy was managed in a manner that would enable it to achieve its full production potential — all of which frequently called for greater government expenditures. As a result, it has been frequently assumed that these two functions were equally important to government, but that they must necessarily reside apart. A clear example is evident in the recent history of Britain, where the Treasury was challenged by the creation of

HA 747 0656 1969 VOL. 7 NO. 2



a Department of Economic Affairs designed to produce long-term economic plans and economic policy, to alleviate economic bottlenecks, and to facilitate the maximization of economic growth. In other jurisdictions, a secondary economic agency, often of secondary importance, has been created within the treasury realm. However, all of these measures were merely a reflection of the relative age difference of economics and finance and the improper assumption that, somehow, they were incompatible and must live apart. Public administration followed a course of accepting an apparent axiom rather than challenging it. Of course, the very decision to set these communities apart tended to confirm the axiom and vitiate any opportunity for its contradiction. Because these communities were conceived to be incompatible, they tended to become incompatible.

The creation of the Department of Treasury and Economics represents a challenge to the conventional wisdom and a conscious belief by the Ontario Government that economic policy and economic planning are not only inherent parts of fiscal and financial policy but, indeed, also the very basis for forecasting, planning and setting fiscal goals. The role of a sensitive and creative finance department is not simply one of managing money, balancing the books, or raising revenue to finance the inevitable — important as those tasks may be. It is a matter of determining what part public expenditure should play in creating an atmosphere in which economic development can take place and in which economic growth will flourish. It is a matter of assessing the potential of the economy and determining how the extent, location and timing of public expenditures and the provision of social capital will assist the development of the economy, upon which all social progress must rest. In other words, it is a matter of determining objectives of expenditure, setting priorities, and planning the road between actions and ends.

Economics, then, is not parallel to engineering or operations research in the sense of being purely a technical apparatus. In the economic policy sense, it is a collection of fiscal and financial policies designed to achieve goals, which the technical or analytical portion of economics has helped to determine. Consequently, the Department of Treasury and Economics has assigned not a minor, or even a secondary place, to economics, but a prominent role in policy formu-

lation. Although the Department may not be unique, neither has it many counterparts. The relative novelty of its existence means that its objectives must be constantly explained, vigorously pursued and assiduously scrutinized. The delicacy of the judgment required involves a sensitive touch and a comprehensive view. Those who labour at these tasks will always require great reserves of patience to endure the conventionally-minded, a high degree of self-confidence to persuade the doubters, a clarity of mind to explain the complexity of the role to the astigmatic, and a layer of toughness to withstand the opposition of the fearful. Nor would any of those qualities be adequate without a constant capacity, within the organization, for self-criticism and self-questioning. Above all, without a commitment to intellectual honesty, the whole exercise is certain to founder.

#### ... AND COMMITMENT.

"The Treasurer shall direct and control the Department of Treasury and Economics, recommend to the Executive Council financial, economic, accounting and taxation policy, advise on federal-provincial affairs, manage the Consolidated Revenue Fund and all public money and supervise, direct and control all financial, economic, statistical and accounting functions not by law or by the Lieutenant Governor in Council otherwise assigned."<sup>1</sup>

Traditionally, the broad term "Treasury" in the Ontario Government referred to the tax collection operations, taxation policy, overall financial policy and money management, along with the expenditure control functions of the Treasury Board and Treasury Board Secretariat. With the responsibility for tax collection and tax administration assumed by the Department of Revenue, the economic research and planning function, federal-provincial affairs, the regional development program, and statistical affairs were brought together with the financial and accounting responsibilities of the former Treasury Department. Meanwhile, the Treasury Board continued its responsibility for expenditure control, administrative policy and administrative co-ordination.

Four divisions have been created in the Department as follows:

- The Policy Planning Division
- The Finance Division

- The Government Accounts Division
- The Economic and Statistical Services Division.

In essence, the functions of the department can best be described in terms of the first three divisions, with the Economic and Statistical Services Division designed to provide basic services to the other divisions and other departments. Attached administratively to the department, as a ministerial agency, is the Computer Services Centre which provides, under the policy guidance of a Computer Services Board and the chairmanship of the Deputy Treasurer, computer services to five government departments and several other agencies, including Treasury and Economics and Revenue. The basic administrative services for the department, as well as for the Treasury Board Secretariat, are provided by the Administrative Division of the Department of Revenue.

#### THE FUNCTIONS OF THE DIVISIONS

##### THE POLICY PLANNING DIVISION

In broad terms, this division provides a core of advice on policy planning to the Prime Minister, the Treasurer and the Cabinet Committee on Policy Development. The division through its four branches:

- recommends alternative provincial and regional economic targets and goals;
- assesses revenue prospects and recommends overall limits of expenditures for the budget and capital outlays;
- recommends economic and fiscal policies which ensure that targets are achieved in a consistent and economical manner;
- suggests priorities for expenditures, programs and policies in order to obtain desired economic and financial returns;
- designs regional development plans for the government's regional development program;
- advises on the overall consistency of government policy in federal-provincial matters, supports the work of the Ontario Advisory Committee on Confederation and fills a staff function for the Prime Minister;
- assesses the merits of alternative taxes and proposes tax policy and reforms.

At the same time, the division is equipped to assist other departments in relating departmental research and proposals to the whole provincial economy, and by clarifying the

<sup>1</sup>The Financial Administration Act, 1968.



degree to which these proposals are consistent with provincial economic targets and goals.

Economic policy planning is now well recognized as a legitimate research and policy function within government. In North America, economic planning operates, by and large, through the instrumentality of government spending rather than by direct controls over the activities of the private sector. The North American connotations of the words 'economic policy planning' are much softer, though not less important, than they are in Western Europe where the tradition of direct governmental intervention is strong and well entrenched.

Five categories of economic planning can be identified and distinguished:<sup>1</sup>

- *aggregate*, concerned with general levels of output, income, employment, consumption, investment, balance of payments;
- *cross-sectoral*, concerned with the supply and distribution of specific resources such as manpower, goods, credit, information;
- *sectoral*, concerned with various sectors of economic activity such as manufacturing, transportation, agriculture, education;
- *enterprise*, concerned with the planning of public, private or mixed types of institutions engaged in provision of goods and/or services;
- *spatial*, concerned with the geographic distribution of activity and co-ordinated area development.

Within the Policy Planning Division, the first three areas of economic policy planning — aggregate, cross-sectoral, sectoral — are the prime concerns of the Economic Planning Branch. Responsibility for the fourth area, enterprise (budgetary) planning, falls to the Taxation and Fiscal Policy Branch. The fifth area, spatial (regional) planning, is carried out in the Regional Development Branch which ties in with the Economic Planning Branch on the regional implications of sectoral and cross-sectoral planning.

#### **Economic Planning Branch**

Much of the research and policy output of the Economic Planning Branch, with respect to social and economic change, becomes an input for other user branches within the Policy Planning Division. For example, changes in the structure of provincial output, income and employment as revealed through relative shifts in sectoral activity associated with, say, manufacturing or transportation,

will be reflected in the spatial distribution of economic activity. Similarly, evaluations and analyses of the significance of changes in current and anticipated levels of particular economic variables will have a profound bearing on the form and type of instruments of financial policy recommended by the Taxation and Fiscal Policy Branch for implementation in the provincial budget.

One of the fundamental objectives of economic policy planning in Ontario is the achievement of a high and substantial rate of real economic growth as measured in general levels of provincial output, income, employment and investment, together with improvements in the particular social and economic well-being of Ontario residents. Thus, the Economic Planning Branch:

- frames, prescribes, and recommends broad economic policies, goals, and alternatives for adoption by the government;
- recommends various courses of action in terms of public policy alternatives, either to advance the growth or retard the stagnation of particular sector(s) in the provincial economy;
- tests and evaluates individual policy recommendations for conformity with overall provincial policy objectives and goals.

In the area of economic research, the Economic Planning Branch examines the symptoms, causes and effects of structural and other change in the various forms of economic activity in the province brought about by differential shifts in the demand for or supply of manpower, capital, natural resources, technology or other factors. The analysis of trends, projections and estimates of structural and other change is undertaken at suitably appropriate aggregate levels. As a result, economic research and policy planning are undertaken in the following areas:

- aggregate analysis of the Ontario economy, including economic forecasting, the establishment of targets and objectives, the identification of problem areas and bottlenecks, and the establishment of aggregate policy guidelines for the economic activities of provincial government departments and agencies;
- sectoral studies relating to the supply and distribution of specific resources, both human and material, and the development of policy proposals for government action within individual sectors or areas.

Such research and policy analysis takes into account current and anticipated trends and structural changes not only in the provincial economy but in the national economy as well. Furthermore, the branch examines all other international economic developments that may have a distinct bearing on the Canadian and Ontario economies.

However, economic planning is more than an attempt to reach satisfactory levels of income and employment. It involves a concern for and research into social welfare and the well-being of individuals. Such attention to people, and not just economic processes, begins with careful analyses of the labour force and its characteristics and extends to research on, and recommendations for, the planning of social welfare and other services to people.

In addition to formulating a realistic set of targets and achievement standards for the performance of the provincial economy, the Economic Planning Branch is also developing significant measures of the rate of change and direction of economic activity in the economy and its key sectors. Such measures should be capable of identifying bottlenecks or impediments in the growth process.

Another important responsibility of this branch is that of establishing economic priorities for the provincial budget. These priorities assist the Government in directing its economic activities in such a way as to obtain the best use of its resources, thereby contributing to advances in the economy as a whole. Associated with this responsibility is the establishment of measures to gauge the effectiveness of public policy responses to economic change at all levels of government — federal, provincial and municipal.

The Economic Planning Branch, either on its own initiative or at the request of the Policy Planning Division and other Ontario Government departments and agencies, recommends, tests and evaluates issues and policies of broad public concern. Included in these activities is the provision of advice and counsel for other government departments and agencies. These responsibilities are as multiple and complex as they are basic and are handled by senior economists who have specialized in research on an individual sector of the economy and government economic programs in the same area.

#### **The Taxation and Fiscal Policy Branch**

The functions of this branch are best explained in terms of its responsibility for the

<sup>1</sup>These five categories were originally suggested in Bertram M. Gross, *Depth Studies on National Planning in the U.S., 1964 (mimeo)*.



preparation of the Government's annual Budget Statement and Budget Papers. Since the budget is the central instrument for the implementation and co-ordination of the Province's economic and fiscal policy, the budgetary process requires continuous review of its various components. Attention must be concentrated on matters such as:

- the growth and impact of expenditures;
- revenue forecasting;
- taxation analysis;
- federal-provincial and provincial-municipal fiscal and financial relations;
- analysis of capital market conditions and the Province's debt operations;
- the options for financing government expenditures;
- variation in cash flows.

In recent years, the Government's expenditures have grown rapidly in response to the heavy demand for public services and facilities in areas of provincial jurisdiction. This rate of growth emphasizes the urgent need to allocate scarce funds in ways which maximize specific social and economic benefits, while simultaneously employing the Government's overall fiscal leverage as a positive instrument for securing stable economic growth. Consequently, this branch is engaged in extensive research in the economic impact of expenditures. As part of the new planning-programming-budgeting system approach to program management, all expenditures are recorded in terms of "economic objects" to provide a detailed profile of the Government's use of economic resources. These data provide inputs for sectoral and econometric models of the economy which, in turn, trace the effects of expenditures through the economy in terms of their impact on incomes, employment and prices. To facilitate this process and to provide expenditure data in a form suitable for economic analysis, the provincial budget is being converted to a "national accounting" basis. These procedures will require the support of the Economic and Statistical Services Division as described in that section of this article.

On the basis of this research, and in close collaboration with the Treasury Board Secretariat, the branch prepares global expenditure guidelines which are reviewed by the Treasurer of Ontario and the Cabinet Committee on Policy Development. From this

review, a framework of approved expenditure guidelines is developed for the annual budget. These guidelines cover, first, the total level of spending appropriate to the Province's forecast financial capacity and evolving economic conditions; and, secondly, the allocation of funds among programs on a priority basis.

In the area of budgetary finance, the branch is responsible for preparing detailed financing plans for the annual budget. In the first instance this involves forecasting the revenue yields of existing tax bases and rates, based on the calculation of the revenue sensitivity of all taxes to anticipated changes in relevant economic variables. Because of the critical importance of accurate forecasting, considerable effort is being devoted to the development of more sophisticated techniques involving computer analysis of taxation data. Given the basic revenue forecasts, the branch studies the range of alternative financing methods which might be used in meeting any excess of expenditure growth over normal revenue increases. This requires the delineation of tax-change options, where attention is given to such factors as revenue yield and economic and income-redistribution effects, and the consideration of the scope for debt financing and the use of liquid reserves.

Closely allied to taxation and financial analysis for any particular budget is the question of long-term taxation. In recent years, considerable attention has been devoted to the need for basic tax structure reform, both in order to provide a viable financial basis for government operations and to allow tax measures to be used as effective economic and social policy instruments. Over the past year, the branch has undertaken a detailed study of the implications of The Report of the Ontario Committee on Taxation (The Smith Report) and of The Report of the Select Committee of the Legislature (The White Report). Following this review, the branch prepared the recent White Paper on "The Reform of Taxation and Government Structure in Ontario", which provides a comprehensive blueprint for provincial-municipal taxation reform in Ontario. In addition, the branch has been responsible for a similar analysis of The Report of the Royal Commission on Taxation (The Carter Report). As a second stage, the branch will be responsible for developing the government's intentions on taxation reform into operational form and for co-ordinating their im-

plementation by the various departments concerned.

Developments in federal-provincial fiscal and financial relations are also of basic importance to Ontario's budgetary planning. This requires continuous analysis of the complex range of intergovernmental tax-sharing and cost-sharing arrangements and participation in the process of policy consultation and co-ordination. Particular attention is, therefore, given to preparation for the periodic meetings of the Tax Structure Committee, the Continuing Committee on Fiscal and Economic Matters, and the Ministers of Finance. The results of these negotiations and consultations are analyzed and feature as basic parameters in developing the Province's short-term budgetary actions and long-term plans. The branch is also involved, with the Federal-Provincial Affairs Secretariat, in studying the economic and fiscal implications of continuing constitutional discussions.

Because of the importance and complexity of the Government's annual budget as a fiscal plan, considerable attention is being given by the branch to refining the basic systems of the budgetary process. First, the relative inflexibility of commitments dictates longer-term expenditure planning. This, together with the long-term tax reform program, will provide increased continuity and perspective to annual budget planning. Similarly, work is underway to improve the range of budgetary planning and consultation between the provincial government and municipalities and other public institutions and agencies. Secondly, a more sophisticated financial information system is being developed in co-operation with the Government Accounts and Finance Divisions of the department. This will provide a better means of assessing the in-year performance of any given budget plan in response to changing conditions, and for providing a smoother financial lead-in to the next budget.

Considerable progress has been made in improving the clarity of the annual budget presentation to the public. Over the past two years, the Treasurer's Budget Statement has been re-designed to provide better explanations of government policy intentions and operations through the use of supporting Budget Papers and the introduction of a new system of financial accounts. Other versions of the public statements and accounts are being revised to conform with the new accounting format. This re-design will permit



the incorporation of further refinements as the new budgetary systems become fully operational.

Continuing refinement of the Government's economic and fiscal policy will depend greatly on improvement in both quantitative and qualitative analysis. The analysis, in turn, is heavily dependent upon an improved flow of compatible data. The 'data-generators' and 'data-processors' are as critical to good policy-making as the computer is to a moon-shot. For this reason, we have placed the highest priority on the aggregation and analysis of economic data in the Economic and Statistical Services Division and the development of a modern "financial information system" based on advanced accounting techniques.

### Regional Development Branch

In a series of policy statements, starting with the Prime Minister's White Paper *Design for Development* issued in April, 1966, the Government of Ontario accepted the responsibility for guiding, assisting and encouraging the orderly development of the province. The three basic objectives of the overall regional development program, as set forth in these policy statements are:

- to encourage each region of the province to achieve its socio-economic potential, in harmony with the overall provincial interest and development;
- to encourage careful use of the natural environment;
- to improve both the efficiency and effectiveness of provincial departmental services.

The institutional machinery established to carry out these objectives consists of the following:

- The Cabinet Committee on Policy Development. This committee is chaired by the Prime Minister and includes six other ministers. The Secretary to the Cabinet serves as Secretary and the Deputy Treasurer and the Secretary of the Treasury Board as advisers.
- An Advisory Committee on Regional Development. Chaired by the Deputy Minister of Treasury and Economics, this committee is comprised of representatives from the departments of Agriculture and Food, Energy and Resources Management, Highways, Lands and Forests, Municipal Affairs, Trade and Development,

Tourism and Information and the Department of the Prime Minister.

- Regional development councils. A council has been established for each of the ten economic planning regions of Ontario and is supported financially by both the provincial government and the municipalities, with membership selected by the latter. The councils' role is basically an advisory one. In March 1968, each council was asked to submit to the Treasurer of Ontario and Minister of Economics, by the end of November, 1968, a formal statement of its major development problems and its recommended solutions and priorities. This has now been carried out.
- Regional advisory boards. These advisory boards are comprised of senior civil servants from those provincial departments which have field offices and are represented on the Advisory Committee. One board has been organized for each planning region.
- The Regional Development Branch of the Department of Treasury and Economics. This branch consists of three main sections; services, research and special projects. The branch is responsible for the preparation of comprehensive regional development plans for consideration by the Advisory Committee. These plans will be based in part upon the recommended programs of both the regional development councils and the regional advisory boards, and in part upon the results of research carried out by Ontario universities, by other departments and by the branch itself. Once these plans are developed, they will be forwarded to the regional development councils for "grass-roots" reaction, before proceeding to the Advisory Committee and, ultimately, to the Cabinet Committee for consideration.

The regional development program has moved forward rapidly since January, 1968. Among its achievements are the following:

- An inventory of all programs, policies and data of provincial departments that might be of value to an emerging regional development program was initiated early in 1967 and was completed by the end of the same year.
- An evaluation of certain basic trends, on as fine a geographic mesh as possible, was begun late in 1967 and completed by the end of 1968. Changes in population, in-

come, labour force, and primary, secondary and tertiary activities in each area were compared with changes in the province as a whole. Three types of region are expected to emerge from this study. One is a region of *self-sustained growth* in which the major problems are those of space adjustment. A second is that of *inconsistent or fluctuating growth*, in which some assistance may be necessary in order to bring the region to its full potential. A third is that of *slow growth* to which major assistance may be necessary if the region is to achieve its potential.

- The planning stage, the logical continuation of the two previous steps, is expected to begin this year. The first stage will emphasize solutions to problems of an economic and social nature, and improvement in both the efficiency and effectiveness of provincial government services. The closely related question regarding careful use of the natural environment will be given attention in a second stage. In developing plans for the province, the Regional Development Branch will be particularly interested in the selection of appropriate growth centres and poles for the three types of region noted here. The functions of such growth points in regions of self-sustained growth will be to *check* rather than *stimulate* economic activity; in fluctuating growth, some stimulation may be necessary; in slow growth, major stimulation may be necessary. The first responsibility in devising the plans will be to select the central places, large and small, which will become appropriate growth points for the type of region in which that point is found. This process will be closely co-ordinated with the emerging pattern of regional governments across the province.
- Early in 1968, a dynamic university research series was initiated, the results of which are already beginning to be useful in Ontario's development program. Each of Ontario's fourteen provincially-supported universities has undertaken at least one research project on some aspect of regional development including recreation, agriculture, industrial location and transportation.
- A study of the Niagara escarpment, co-ordinated by Professor L. O. Gertler of the University of Waterloo, was begun by the branch early in 1967 at the request of



the Prime Minister. The three-part study was concluded and submitted to the Government earlier this year.

- In April 1968, an ARDA<sup>1</sup> study of the most populated portion of North-western Ontario was undertaken by the branch, under joint federal-provincial support and supervision. An economic base study of the area is currently underway and a first report will be made this year.
- A Goals Plan Study Committee, comprised of the same departments as represented on the Advisory Committee, was established to review the reactions to the Goals Plan presentation — a product of the Metropolitan Toronto and Region Transportation Study (MTARTS) — and to submit recommendations to the Advisory Committee. Because of the close timing between the planning stage of the Regional Development Branch and the release of the Goals Plan Study, this Committee has also been instructed to act as a sounding board for regional development principles involving metropolitan areas and immediately adjacent territories. Thus, a smooth transition will be established from the Goals Plan Study, released in June, 1968, to the emerging regional development program.

The attention which this program and policy has attracted, not only in other parts of Canada but internationally, is a measure of the vitality and variety of its development.

#### The Federal-Provincial Affairs Secretariat

The provision of advice to governments, on a full-time basis, concerning what might broadly be termed intergovernmental relationships is a relatively new development in Canada. Today, only three governments in this country — those of Canada, Ontario and Quebec — have staffs who deal exclusively with this subject.

The growing national concern about constitutional and fiscal matters was reflected in a decision by the Government of Ontario, in January 1965, to establish the Ontario Advisory Committee on Confederation (OACC). Several factors motivated the Government to take this step:

- a desire to participate fully in the debate on the future of Canadian federalism;
- a need to examine the position of Ontario within Confederation;

- a recognition of the changing nature of federal-provincial and interprovincial relationships.

The Advisory Committee is composed of a number of prominent persons, primarily from the university community, under the chairmanship of the Deputy Treasurer. The first results of its work were published in 1967 in the volume *Background Papers and Reports*. The Committee plays an important role in advising the Government on many matters pertaining to the current Confederation debate. It is a unique body in the sense that no other government in Canada receives regular advice from such a formally constituted group of non-government experts.

The Government's continuing concern led to the next logical step, in March 1966, when the Federal-Provincial Affairs Secretariat was created as part of the Office of the Chief Economist. Since its formation, the Secretariat's activities have centred around three major areas:

- constitutional matters;
- cultural and linguistic questions;
- the machinery of intergovernmental relationships.

In conjunction with the OACC, the responsibility of the Secretariat is to develop recommendations for the Government's consideration on these subjects and, at the same time, to provide the necessary perspective on intergovernmental relationships in Canada in an effort to support a consistent and progressive set of policies on these issues.

A brief review of each of these three areas of concentration may provide a better understanding of the functions of the Secretariat.

#### • Constitutional matters

In the past year or so, the Secretariat was closely involved with a variety of meetings dealing with constitutional issues:

1. November, 1967 — the Confederation of Tomorrow Conference;
2. February, 1968 — the Constitutional Conference of Prime Ministers and Premiers;
3. May, 1968 and following — the Continuing Committee of Officials on the Constitution (CCO);
4. February, 1969 — the Second Constitutional Conference of Prime Ministers and Premiers.

The Continuing Committee of Officials was established at the closing session of the February 1968 Conference to carry forward the discussions initiated at that Conference and at the Confederation of Tomorrow Conference. The Committee consists of senior civil servants from the eleven governments in Canada and is supported by a full-time staff, responsible to all governments and located in Ottawa. The CCO submitted a report on the first phase of its work to the Second Constitutional Conference in February. The widespread character of this novel process of constitutional review is evident from the range of subjects which the CCO is considering. These include: the official languages, fundamental rights, the distribution of powers, the machinery of intergovernmental relationships, an amending procedure, and so forth.

Since the CCO was established, the Secretariat has collaborated closely with the Department of the Attorney General in preparing Ontario's contributions to these meetings. The results of these initial contributions were tabled in the Ontario Legislature on February 5, 1969, in a booklet entitled *Propositions of the Government of Ontario*.

The work of the CCO and several new ministerial committees will continue as a result of the conclusions of the recent Constitutional Conference, which reaffirmed the intent of the eleven governments to complete a comprehensive review of the Constitution of Canada and instructed that the process of review should be accelerated.

#### • Cultural and linguistic questions

Several events since 1967 have involved the Secretariat in studies on the question of the place of the English and French languages in Canada, such as:

1. The Reports of the Royal Commission on Bilingualism and Biculturalism. In December 1967, the first volume of the Report of the Royal Commission on Bilingualism and Biculturalism, entitled *The Official Languages*, was published. In December 1968, the second volume, entitled *Education* was issued. The Secretariat provided the Government with an analysis of the contents of these two volumes, and will do the same with succeeding volumes as they appear.
2. The Task Forces on the use of English and French in Ontario. In February 1968, Prime Minister Robarts announced the

<sup>1</sup>Agricultural Rehabilitation and Development Act.



establishment of four task forces to study the administrative use of French in Ontario. The four areas of study were: municipal administration, the administration of justice, the provincial public service, and the Legislature and provincial statutes. Along with officials from the operating departments concerned with each of these areas, members of the Secretariat helped to staff these task forces, provided research assistance, and assisted in the preparation of the final reports. The reports and recommendations of all four task forces were submitted to the Prime Minister in October 1968.

3. The Official Languages Sub-Committee of the CCO. In addition to studying the provision of French-language services at the provincial level, the Secretariat has participated in discussions at the inter-governmental level on many aspects of bilingualism. When Canada's Prime Ministers and Premiers established the CCO, they attached to it a Sub-Committee on Official Languages to serve as a forum in which the views of all governments on questions related to bilingualism in Canada could be presented. Members of the Secretariat are among Ontario's representatives at these meetings.
4. French-language schools. The Secretariat's concern with these schools, which were established by legislation in July 1968, arose as a result of its involvement with the question of providing French-language services in the province. During the past year, a member of the Secretariat served as Secretary to the Department of Education's Committee on French-language Schools whose report was recently published.

• *The machinery of intergovernmental relationships.*

Two points deserve special emphasis in connection with the Secretariat's work on the machinery of intergovernmental relations. First, "intergovernmental machinery" is a relatively new area of study now being undertaken by some governments in Canada. Second, it is an area which has become increasingly important as the necessity for more sophisticated intergovernmental relations in Canada is made evident.

In recent years, Canada has witnessed a proliferation of well over 100 intergovernmental committees, sub-committees, councils,

conferences and commissions. While governments recognize that increased intergovernmental contacts — on the international, the federal-provincial and the interprovincial planes — are not only desirable in themselves but also highly necessary to the functioning of a healthy federal system, they are also becoming increasingly aware of the need to achieve better co-ordination of these enlarging relationships.

Within this perspective, the Secretariat has been assigned the task of analyzing the existing structure of Ontario's relationships with other governments. During the past year, at the request of a variety of departments, a staff member from the Secretariat has attended, as an observer or participant, inter-governmental meetings at the ministerial and official levels on such matters as consumer affairs, resources, transport and welfare.

In addition to its activities in the three main areas, the Secretariat provides support staff for the OACC, preparing agendas for its meetings, distributing pertinent material to its members, and producing studies for its consideration.

Along with the two publications previously mentioned in this article, the Secretariat also prepared the following volumes for publication:

1. *Quebec in the Canada of Tomorrow* — an English edition of a supplement which originally appeared in the Montreal newspaper *Le Devoir*;
2. *Confederation of Tomorrow Conference Theme Papers* — a collection of five papers on the agenda of the Conference;
3. *Confederation of Tomorrow Conference Proceedings* — the verbatim record of the Conference.

As a continuing information service, the Secretariat produces in translation a monthly summary of editorial opinion from the French-language press in Canada. While the summary is not yet available for general public distribution, it is sent to many persons within the Government of Ontario and in all other governments in Canada.

Finally, the Secretariat attempts to maintain close intragovernmental contacts in order to keep itself informed on the technical problems pertaining to intergovernmental relations which confront the operating departments and agencies of the Government of Ontario. With such contacts and the understanding which results from them, the Secretariat is better able to provide useful policy

options and advice on the complex and varied issues confronting contemporary Canadian federalism.

## THE FINANCE DIVISION

The basic task of the Finance Division is management and administration of the public debt of Ontario. Divided into two branches — the Finance Management Branch and the Securities Branch — the division is responsible for cash and investment management of ordinary and capital funds approaching \$4 billion per annum and for all the debt transactions emanating from an increasingly broad and complex character.

The management of the daily cash and the wise investment of cash flow is an all-government operation and measures are presently being considered to ensure the most rapid receipt of proceeds in all departments and agencies and to ensure that these funds are put to work in the most profitable manner. This process involves the budgeting for significant cash inflows and outflows up to a year in advance.<sup>1</sup>

The maintenance of the Ontario Government securities market and the responsibility for all government bond issues now involves a detailed command of a great variety of conditions and circumstances in the capital markets of the world. The floating of new issues, the servicing of new debt and the management of several Crown Corporations concerned with capital aid have recently been extended by a new dimension — the entry of the Ontario Government into the European capital market.

To support this work, the division maintains continuing studies on trends in public finance and must, at the same time, maintain a continuing liaison on financial and debt matters with The Hydro-Electric Power Commission of Ontario (whose securities are all guaranteed by the Province), with other financial agencies and with those responsible for certain designated funds.

The Finance Division and the Taxation and Fiscal Policy Branch are blood brothers in the budgetary process and in the realm of public finance. To a greater degree than any other relationship in the department, "economics" and "finance" are brought into daily harmony through the interaction of the Finance Division and the Taxation and Fiscal Policy Branch. It will be interesting to observe, over time, the development of a common language among government bankers and economists.

<sup>1</sup>The Treasurer of Ontario devoted particular attention to this matter in the Ontario Budget recently: "... the Department of Treasury and Economics is preparing

to introduce new and more sophisticated accounting practices throughout the Government to ensure an immediate flow of financial data to the Department. This should provide a

continuing profile of the current financial situation and clearer guidance for cash management and investment decisions".



## GOVERNMENT ACCOUNTS DIVISION

The Government Accounts Division is the agency responsible for the development and maintenance of government-wide accounting and financial systems both for central agencies and other departments, the maintenance of overall financial records, as well as the central cashing and disbursement functions, including payments from special funds. The division is also responsible for the administration of the Government's insurance plan and pensions payable under The Public Service Superannuation Act and The Legislative Assembly Retirement Allowances Act.

As indicated in the discussion of the work of the Taxation and Fiscal Policy Branch, the key role at this time is the development of a sophisticated financial information system on a government-wide basis, a project that will be moving ahead with all possible haste. This procedure will support the continuing development, presently underway, of financial statements, public accounts, and budgetary statements in forms that will illustrate clearly the inflow and outflow of government finances and support the work of the Taxation and Fiscal Policy Branch. In this process, the Government Accounts Division will be working even more closely with all departments in developing common accounting policy and financial reporting methods.

### Government Accounts Branch

The role of the Government Accounts Branch is basically twofold in character: extroverted towards the departments in respect of its advisory and accounting policy-making function, and introverted in its capacity as the central cashier, paying agent, and recording and reporting unit of the Government.

In the former role, a continuing liaison, currently being strengthened and developed, exists with the senior financial officers of the various government departments, aimed at the application of overall government policies as they relate to common accounting functions. Interpretation and advice is supplied by the branch as it relates to accounting policy and to submissions from departments seeking to initiate new methods, records, systems and reports. Through assistance in the planning, research and implementation of major projects such as program-planning-budgeting systems, financial information systems, or economic (national)

accounting conversion, the branch provides an operational bridge with the departments.

In its other capacity, the branch is, in effect, the central accounting and control point for the Government's daily business. All moneys are collected and deposited with the cashier while, as the paying agent, the branch writes cheques for the payment of all suppliers' accounts, numbering approximately 800,000 per year. Close daily contact is maintained in these areas with the Finance Division to assist in the effective management of the provincial cash position.

The central records maintained by the branch are the source of the various financial statements of the Province. These include the statements in the Public Accounts of the Province and the Abridged Report, which are distributed to members of the Legislature and throughout the financial community. From this branch, there also emanate all prospectuses relating to provincial loan issues in Canada, the United States and Europe, together with much information of a financial nature submitted to the Dominion Bureau of Statistics and to various financial institutions. Information is exchanged with and supplied to the Taxation and Fiscal Policy Branch in the preparation of the Budget Papers and to the Treasury Board Secretariat for its work on the Estimates.

The payroll for all regular and probationary staff, a complex computer-based system paying 55,000 employees every two weeks, is co-ordinated by this branch and programming improvements and refinements are continuously being developed in conjunction with the Systems and Programming Branch of the Economic and Statistical Services Division. Payroll policies are devised by the co-ordinating unit, and instruction and guidance are given to the departments.

In support of the payroll system, the Tabulating Section key-punches some 35,000 monthly changes to the computer master file from departmental input material. In addition to this task, the Tabulating Section updates all records and produces some 70,000 welfare cheques and 6,000 superannuation cheques per month, plus all cheques in payment of interest due on outstanding provincial bond issues. From time to time, other periodic productions include items such as some 75,000 student award cheques for the Department of University Affairs. In this respect, the Tabulating Section backs up the Computer Services Centre by undertaking the "intermediate" tabulating

needs of government, which are too small to warrant a computer application, but larger than can be handled by a manual or book-keeping-machine operation.

The Loan Accounting Section administers the control, accounting and collection of loans, liens, mortgages and debentures arising from various statutes, principally The Municipal and School Tax Credit Assistance Act, The Tile Drainage Act, and the Co-operative Loan Act. Other functions include the recording and collection of advances and loans made to provincial Crown Corporations and Agencies, the administration of bequests and scholarships held by the Province under certain trust deeds and of special funds arising from statutes dealing with industrial standards, minimum wage and fair wage practices.

### Government Accounting Methods Branch

This new branch has been formed to play a vital role in the Government's organization for financial control. It acts in an advisory or consulting fashion in the fields of finance and accounting related to both new and existing legislation. It is equipped to supply accounting expertise for the co-ordinated studies of economists, Treasury Board officers and senior financial officers across government. Its purpose and scope are best summed up as follows:

- it is a central source of professional accountants skilled in accounting methods work;
- it has the capacity to develop (in co-operation with the Government Accounts Branch) financial information systems;
- it provides accounting systems support to all units of government upon the request of departmental financial administrators or at the direction of the Comptroller of Accounts;
- it interprets, defines and recommends accounting policy for the Department of Treasury and Economics;
- it co-operates with representatives from other specialist bodies, for example, the Advisory Services Division and the Program and Estimates Division of the Treasury Board Secretariat, by seconding its officers to joint task forces created to review problems of a government-wide nature;
- it provides an environment in which the training of government accountants and



financial advisers can take place on a broad scale;

- it conducts a continuous program of research into accounting theory and practice, pertinent to the needs of government.

The branch has, in effect, a staff function and its officers are being selected for their ability to create and to implement appropriate accounting systems in any branch of government. Their skill is derived from a professional accounting training with many years of practical application in a government or business environment. In developing these new functions, they will be not only undertaking a major responsibility but also participating in a creative venture.

#### Pension Funds Branch

In 1961, the Pension Funds Branch was formed in the Government Accounts Division of the Treasury Department and has since handled the administrative and accounting work under the Public Service Superannuation Act and The Legislative Assembly Retirement Allowances Act. In this process, the main functions are the following:

- opening and maintaining history and contribution data for each contributor, and ensuring that each contributor receives full credit for his continuous employment in the Ontario Public Service and for any prior pensionable service with another pension fund with whom the Government has a reciprocal transfer of pension credits arrangement;
- maintaining proper accounting records with respect to the two funds and preparing financial statements, estimates and forecasts for the funds and accumulating data required for the triennial actuarial evaluation of the Public Service Superannuation Fund;
- refunding contributions and transferring contributions to other pension funds for those who cease to be contributors by reason of resignation, dismissal or death;
- calculating and paying annuities, retirement pensions, disability pensions, dependants' pensions and lump sum payments where contributors retire, for health or other reasons, or die;
- providing policy and secretarial services to the Public Service Superannuation Board and counselling services to contributors, pensioners, senior government officials and estate representatives.

Such a broad administrative activity is also productive of a variety of aggregate data of great interest to the policy planning of the Ontario Government.

#### Group Insurance Section

As part of the negotiated fringe benefits for civil servants, the Government agreed to contribute part of the cost of a group life and health benefit plan. The Province of Ontario Employees' Group Insurance Plan was the result of this agreement, with the Government assuming 75 per cent of the premium for a compulsory basic life insurance policy for every eligible civil servant, and 65 per cent of the premium for an optional basic surgical-medical benefit for those employees who choose this benefit. When the agreement was brought into effect, the Government decided to centralize the administrative, central control and employee-insurance company liaison function of the Plan by creating a Group Insurance Section answering directly to the Comptroller of Accounts.

In the administration of the Plan, the Group Insurance Section is responsible for advising the underwriter of all applications, terminations and changes in insurance coverage for the more than 60,000 eligible employees. To accomplish this, all transactions affecting insurance coverage are communicated to this section by all government departments and participating boards and commissions (approximately 2,000 per month). Each transaction is scrutinized to ensure that it accords with the terms of the contract governing the Plan and that the information is correct.

All administrative circulars pertaining to procedures and interpretations of the contract are prepared and issued by this section, as are all pertinent literature and designated forms. Claims received by the underwriter for services which are not clearly defined in the contract are referred to this section for an opinion as to the manner in which the claim should be treated. Employees also look to this section for an explanation of disallowed claims.

In a word, Group Insurance, a very small section, maintains contact with a wide variety of people.

#### ECONOMIC AND STATISTICAL SERVICES DIVISION

In addition to the Government Accounts Division, the other great source of data — the producer of raw material for the whole

department — is the Economic and Statistical Services Division. It is composed of three branches; the Economic Analysis Branch, the Ontario Statistical Centre, and the Systems and Programming Branch. Each of these support functions is crucial to the of other divisions and complex in its professional responsibilities. In that sense, they form the foundation stone of the whole department. As a result, major administrative attention is now being directed to the development of these branches.

#### Economic Analysis Branch

Whereas the qualitative aspects of economic and social life should be paramount, our appreciation and evaluation of the best means to achieve better conditions can be immeasurably assisted by the scientific method. Reflecting this increasing need for detailed quantitative analyses of major sectors of the Ontario economy, the Economic Analysis Branch was created as the "scientific arm" of our body of economists. Last year, the branch initiated a continuing econometric program designed for the formulation, estimation and testing of econometric models. In order to provide maximum flexibility in terms of application, model designs will incorporate both forecasting and policy-testing features. Considerable emphasis is placed the development of computer simulation experiments with economic models, both for design verification and the testing of alternative policies. As the design of econometric models requires large data inputs, considerable time and effort have to be devoted to the development of new time series in cooperation with the Ontario Statistical Centre and other sections of the Economic Analysis Branch.

During the past few months, a preliminary formulation of an aggregate model for the Ontario economy was developed while major structural sectors are now in the testing stage. Dynamic features will be incorporated into the existing equation system to assess relative stability characteristics of the model.

The final version of the pilot model now under development is scheduled to be completed by mid-1970. While at present the prime target is the development of an integrated model of Ontario's economy at a fairly high level of aggregation, during the fiscal year 1970/71 considerable emphasis will be placed on the design of more detailed sectoral models for specific areas of eco-



economic activity such as manufacturing and agriculture.

Supplementing the dynamic analysis of Ontario's economy in the form of econometric models, an input-output table for the province is being developed to provide a valuable tool for the structural analysis of the sectoral interdependence of the economy. The first input-output table for the Ontario economy is scheduled for publication by mid-1970. Reflecting the currently limited availability of basic data, the size of the first table will be confined to a transaction matrix of the approximate order 60 x 60. The table is based on 1965 data and efforts are currently concentrated on extracting pertinent statistics from the Ontario Census of Manufactures (1965).

As the design of an integrated econometric model for Ontario is, to a large extent, dependent on the availability of "national account type data" for the province and the constituent ten economic regions, the branch intends to continue and to expand its work on the development of provincial and regional income and expenditure data. Reflecting existing data limitations, the research program concentrates on those account components available at national and provincial level which are susceptible to regional decomposition on the basis of corollary information sources and through application of advanced statistical and econometric techniques.

During the past few months, a time-series on consumption expenditures in Ontario has been developed to facilitate the analysis of provincial and regional differences in consumption patterns. The study represents the first step in the development of an expenditure-flow table for the design of provincial and regional accounts, supplementing previous pilot studies on regional income. (A condensed version of the study was published in the September/October 1968 issue of the *Ontario Economic Review*.) Meanwhile, work on the disaggregation of consumer expenditures by major commodity groups was initiated last September to determine group-specific income elasticities. Basic provincial accounts (of the national account type) for the period 1957-1968 are scheduled for publication at the end of 1969, while the constituent regional accounts will be developed during the fiscal year 1970-71.

The demographic section of the Economic Analysis Branch is examining, systematically, all aspects of Ontario's population structure

with a view to assessing the economic and social impact of demographic variables over time. While concentrating essentially on the Ontario scene, the section is carrying out comparative studies for the evaluation of demographic trends in other provinces, the United States and selected foreign countries. A comprehensive tabulation of preliminary population forecasts to 1991 was compiled and has already been published.<sup>1</sup> A mathematical model of population growth, utilizing the analytical framework of generalized Markov processes, is also being developed to improve forecasting accuracy.

The last, but by no means least, responsibility of the Economic Analysis Branch is the publication of the *Ontario Economic Review* and the provision of continuous editorial services to the whole department. Modifications of and additions to the "Economic Indicators" currently in use are under study and we expect that the work performed in other sections of the branch will provide the basis for improving the analytical and statistical content of the *Ontario Economic Review*. We welcome the dialogue which has been joined with many of our readers; we have benefited greatly from their comments and advice.

#### Ontario Statistical Centre

The basic function of the Ontario Statistical Centre is to engage in the efficient collection, storage and production of statistical information as required by the central research units for economic analysis and policy planning in the Department of Treasury and Economics. The Centre advises on matters concerning administration of the Ontario Statistics Act, designs samples for statistical purposes and may conduct field surveys for Ontario Government departments. It exerts a co-ordinating influence on the statistical activities of provincial departments and agencies of government and provides liaison between the Government of Ontario and the Dominion Bureau of Statistics in statistical matters. The Ontario Statistical Centre works closely with the Economic Analysis Branch in the acquisition of raw data necessary for the development of input-output tables and the construction of provincial economic accounts for improved analytical and forecasting purposes.

Another aspect of its work is concerned with applied research in the area of statistical techniques and systems. Such activities include the development of a central informa-

tion system, including a data bank facility designed to facilitate the integration of selected economic, financial and administrative data useful for research and decision-making purposes by government and the business community. The Centre aids in developing standards and systems compatible with a data bank operation and undertakes feasibility studies to determine research needs for administrative data on a selective basis. Common information stored in the central information system will be made available to government departments and industry in a form and to the extent permitted by the statutory and administrative rules of confidentiality and disclosure.

The Centre is currently engaged in compiling a nucleus of socio-economic statistics on the Ontario economy. The major source of such statistics — shortly to be computerized — is the Census of Manufactures, a survey conducted in conjunction with the Dominion Bureau of Statistics using duplicate Bureau questionnaires to compile information on the manufacturing industries of the province. The data collected pertain to inventory, fuel and electricity, raw materials and supplies, shipments, goods purchased for resale, and payroll and employment. This information is used as a statistical base for economic planning projects underway in other units of the department, at both provincial and sub-provincial levels, as well as the development studies concerning input-output analysis and related activities.

At present, the bank of socio-economic statistics is being expanded to include data from the census of forestry and other industry returns as resources permit. Statistics relating to the operation of selected industries in Ontario are being compiled and will be published periodically and, whenever possible, the publication of similar information for sub-provincial areas such as the ten economic regions, will be carried out. Census material will be supplemented from time to time by data derived from special field surveys, and it is expected that a small field or liaison force will be used in connection with all surveys, to facilitate the flow of raw data from respondents to the Centre.

In addition to the Census of Manufactures, the Centre participates in *ad hoc* surveys in order to provide data urgently needed for formulating government policy in problem areas such as pollution and waste disposal. It is currently conducting annual and quarterly surveys in co-operation with

<sup>1</sup>Province of Ontario, Department of Treasury and Economics, Preliminary Population Projections for Ontario, 1971-1991.



the Pension Commission of Ontario, the Department of Financial and Commercial Affairs, and the Department of Municipal Affairs to provide data on credit union and pension plan operations and to assist in the development of "small area statistics". Administrative data generated by other departments are utilized by the Centre to provide information concerning retail sales, vital statistics and government expenditures.

In addition to preparing sample designs and determining the sampling technique and sample size to be used, the Centre also prepares estimates of man-power, cost and time involved in field surveys. It co-operates with branches initiating the survey in the preparation and pretesting of questionnaires. Assistance is also provided in the preparation of interviewers' manuals and in the training of field forces to ensure correct interpretation of basic concepts and methods of interview.

The Centre develops or assists in the development of common coding and classification systems for industries, commodities, occupations, or geographical areas and co-operates with other statistical bodies in developing statistical standards. It co-ordinates the use of common codes and classification in the province and provides consulting services to other departments in the classification of statistical information. The Centre is in continuing contact with computer programmers and systems analysts in order to obtain maximum use of data processing techniques.

Alert to modern techniques and methods in the statistical field, the Centre is computer-oriented with data development carried out and integrated by application of the "information systems" concept. The Ontario Statistical Centre faces an immense and demanding task in meeting an increasing need for reliable statistics in support of quantitative analysis and informed policy formulation.

### Systems and Programming Branch

For more than a decade, government planners and administrators in Ontario have been using computers to save taxpayers' dollars. To realize the vast potential which this machinery offers requires the readily available services of highly skilled and competent computer systems and programming staff.

There is a great deal of truth in the aphorism: "It would take 200 mathematicians 60 years to make the same mistake that the computer can make in just 10 seconds." However, the Systems and Pro-

gramming Branch of the Department is composed primarily of computer systems analysts and computer programmers dedicated to providing other divisions of the department with easy access to computing facilities, without risking the danger of making such colossal and expensive errors.

Many people ask why the Government has invested so heavily in computing facilities. The answer, at least in part, is simple. As much as 90 per cent of all management decisions made each year probably could be defined precisely and, consequently, are possible to perform with a computer system. For example, decisions related to purchasing, allocation of materials, facilities and capital, as well as routine inventory control, can be performed by computer systems using operations research techniques. In many instances, computerized systems help to improve decision-making by reducing the expenditures of time, money and talent. As a consequence, managers are able to spend more time on those higher-level decisions which currently defy precise analysis. Even in these difficult areas, the computer can provide assistance by allowing managers to quickly and economically explore various alternative solutions to a problem through the use of simulation techniques.

The aim of the Systems and Programming Branch is, therefore, directed toward serving the management needs within the department. The branch is responsible for conducting all computer systems development and program implementation for the Government Accounts, Policy Planning, and Finance Divisions. In addition, it develops applications for the Ontario Statistical Centre and the Economic Analysis Branch. The branch also plays a key role in the implementation of the computerized central information system, embracing the data bank facility. This will provide management with ready access to extensive socio-economic information about Ontario.

Activities now underway include the development and maintenance of:

- the government-wide payroll and information report system;
- a comprehensive library of generalized computer programs for advanced techniques of statistical processing and economic analysis;
- other small scale computer system applications of both a commercial data processing and scientific nature.

The branch also offers counsel on the feasibility of employing various data-processing and mathematically oriented management techniques within the department.

Future work, currently planned, will involve participation in the implementation of computer-based systems for:

- a government-wide planning-programming-budgeting system under the direction of Treasury Board;
- general purpose, statistical utility computer routines to deal with large volumes of data, involving many interrelated variables;
- management information retrieval system to process large data files involving complex data records.

How is all this achieved? Essentially, the five major functions involved in the development and implementation of typical computer systems applications are the following:

- problem definition and specifications;
- computer systems design and development;
- scientific computer programming;
- data processing computer programming;
- computerized data file creation.

The organization of the branch has been designed to accommodate each of the above functions because each activity requires a distinctly different and highly specialized discipline for its satisfactory execution.

An interesting feature not often found in government units is the project team, or task force concept, used by the branch in carrying out all of its projects. Major projects usually involve requirements from each of the five specialist areas. The required personnel, therefore, are selected from the five areas and assigned to a project task force on a work-time percentage basis.

As phases of the project are completed, certain personnel may be phased out of the task force, while others increase their participation in the project. There is consequently no rigid or static organizational pattern associated with each project in which the branch is engaged. Ideally the project task team also includes persons assigned from the unit for which the system is being developed. This flexible organizational approach, combined with the inherent savings of automated systems, allows the department to perform its functions at a much lower cost than would be possible by any other method. Over the last ten years, computing speed has



improved a thousandfold and storage space has been reduced in cost by roughly the same factor.

The efficiency of computing is likely to continue this trend well into the 1970's, whereas the expected cost of human labour resources is likely to continue its increase. Consequently, while today's taxpayer benefits from the development of computerized systems, an even greater saving to the taxpayer of the 1970's can be anticipated. The Department of Treasury and Economics is

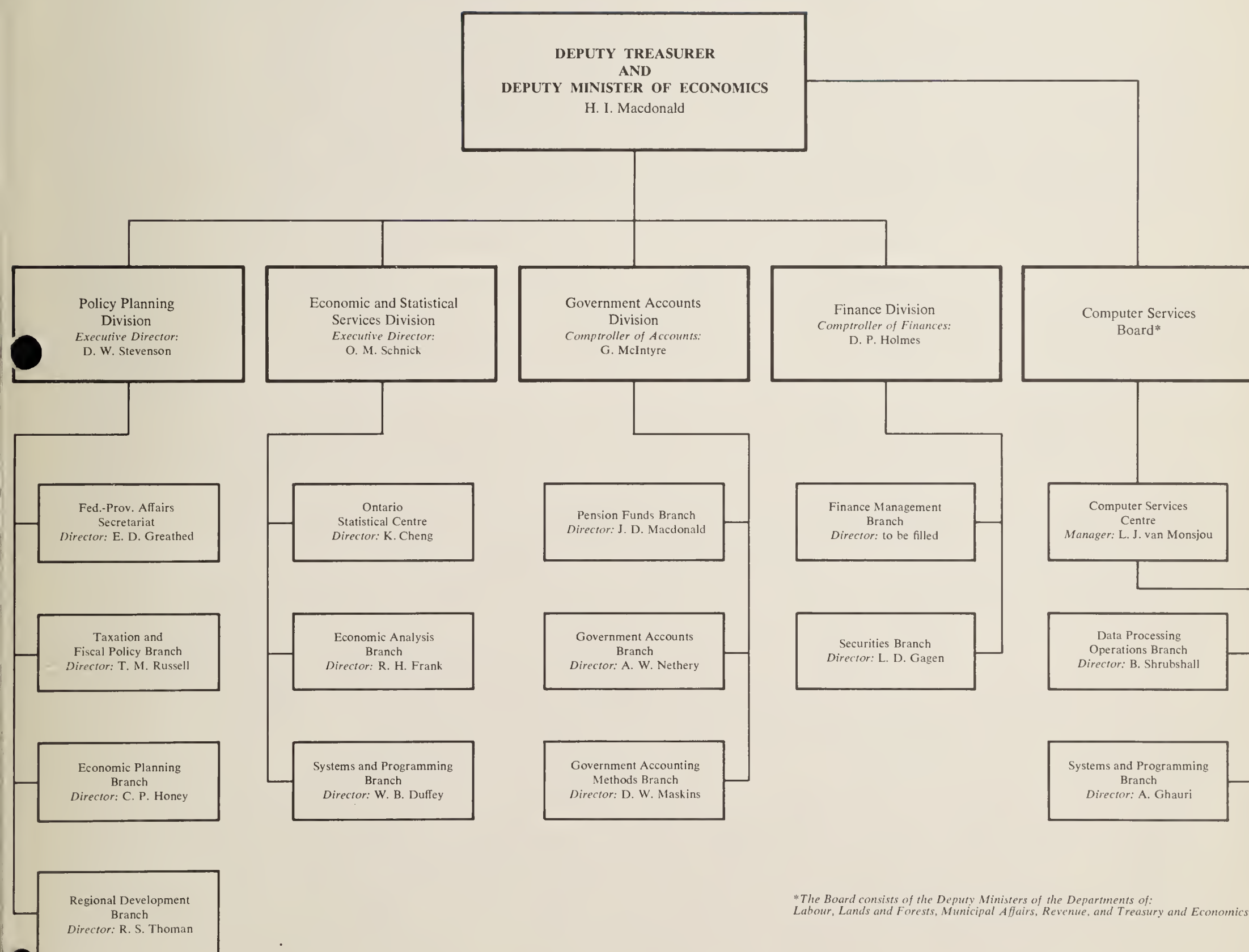
determined not only to exploit that advantage but also to ensure that its research techniques and its administrative practice are in the vanguard of technological change.

### THE ROAD AHEAD

The honeymoon is over and the strenuous task of building a happy marriage has begun. Already, the household has introduced modern electronic devices in terms of access to the Computer Services Centre. Time and space do not permit a fuller description of

that Centre, whose services are so valuable and critical to the effective development of the household. The marriage of "economics" with "finance" is proving to be an exciting and stimulating one for those privileged to be involved — rich in promise and determined to succeed. The department is a response to a philosophy and has been organized to ensure a unity of purpose and function. In the fiscal year 1969/70, the four hundred members of the department will be working together to that end.

## DEPARTMENT OF TREASURY AND ECONOMICS



\*The Board consists of the Deputy Ministers of the Departments of: Labour, Lands and Forests, Municipal Affairs, Revenue, and Treasury and Economics.



# Selected Economic Indicators

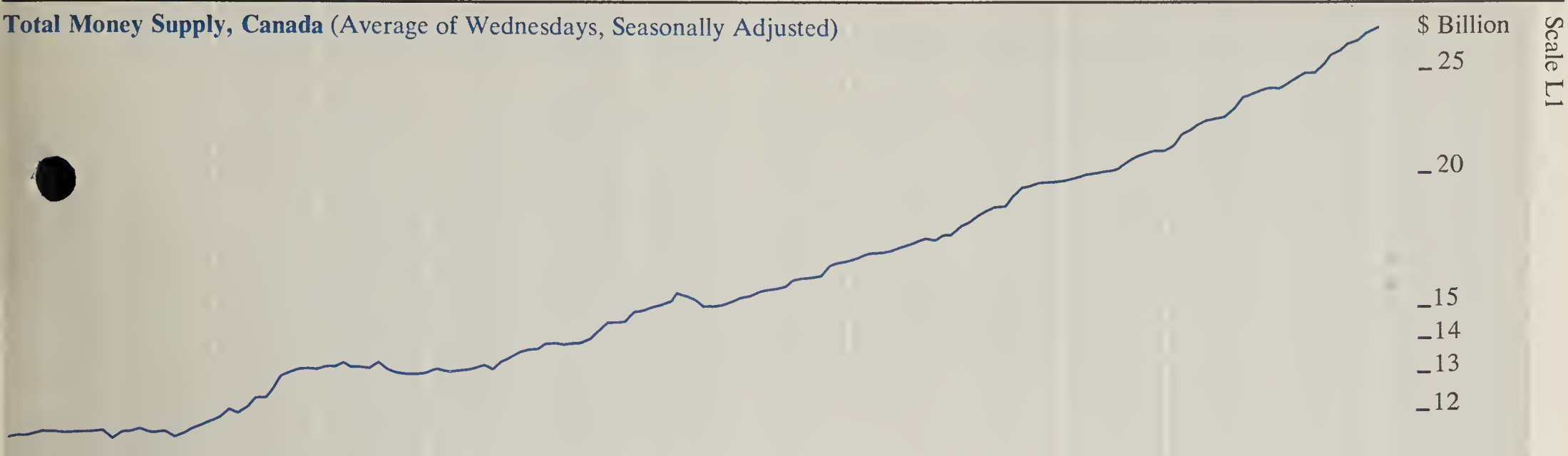
## Leading Indicators





## Leading Indicators

**Total Money Supply, Canada** (Average of Wednesdays, Seasonally Adjusted)

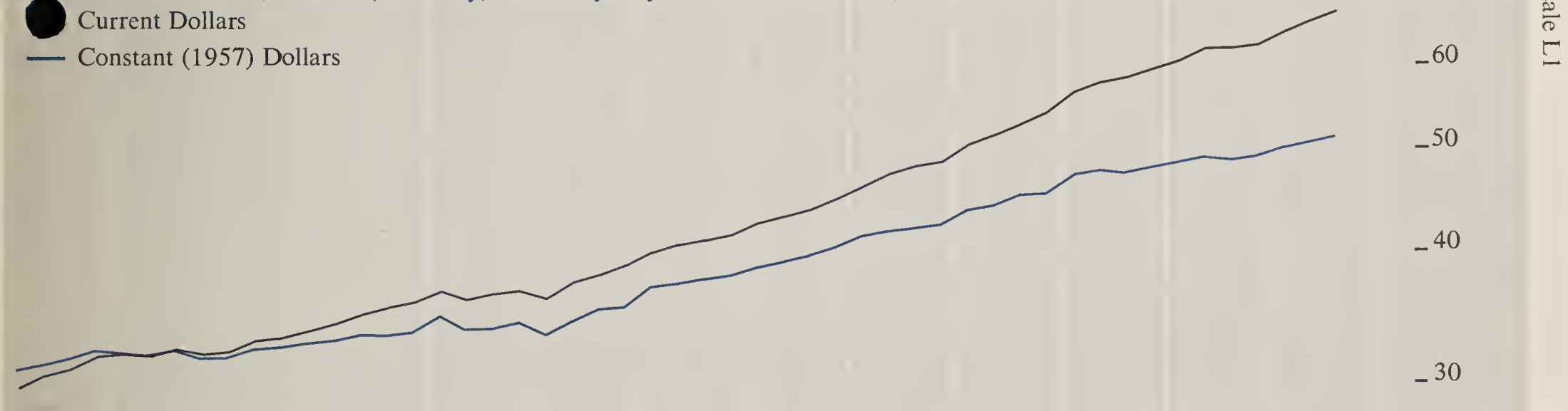


**Toronto Stock Exchange Industrial Index** (1956 = 100, Not Seasonally Adjusted)

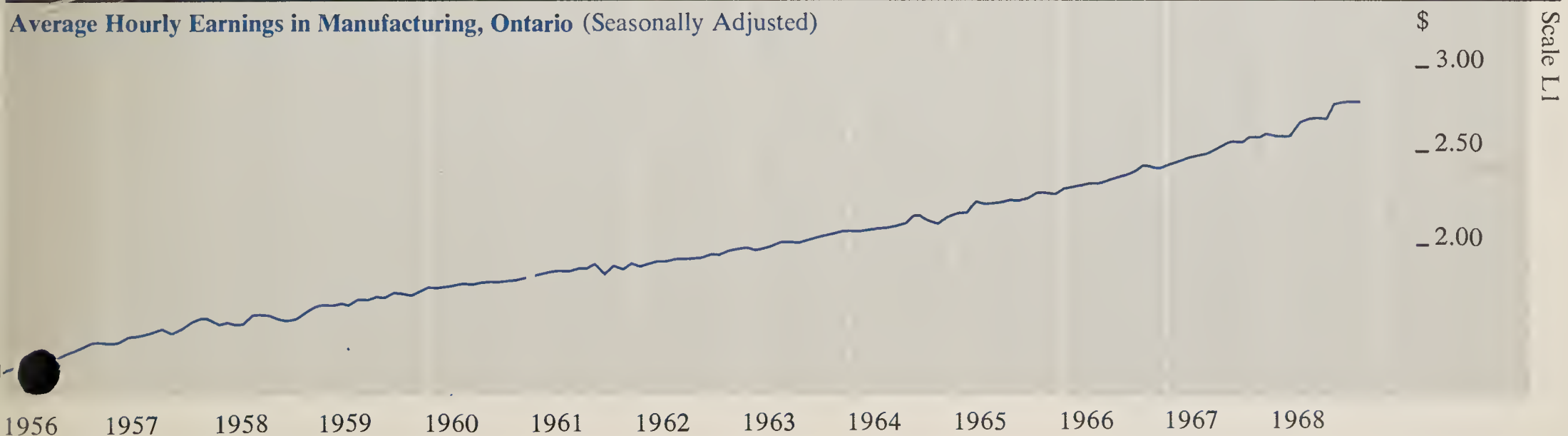


## Coincidental and Lagging Indicators

**Gross National Product, Canada** (Quarterly, Seasonally Adjusted at Annual Rates)

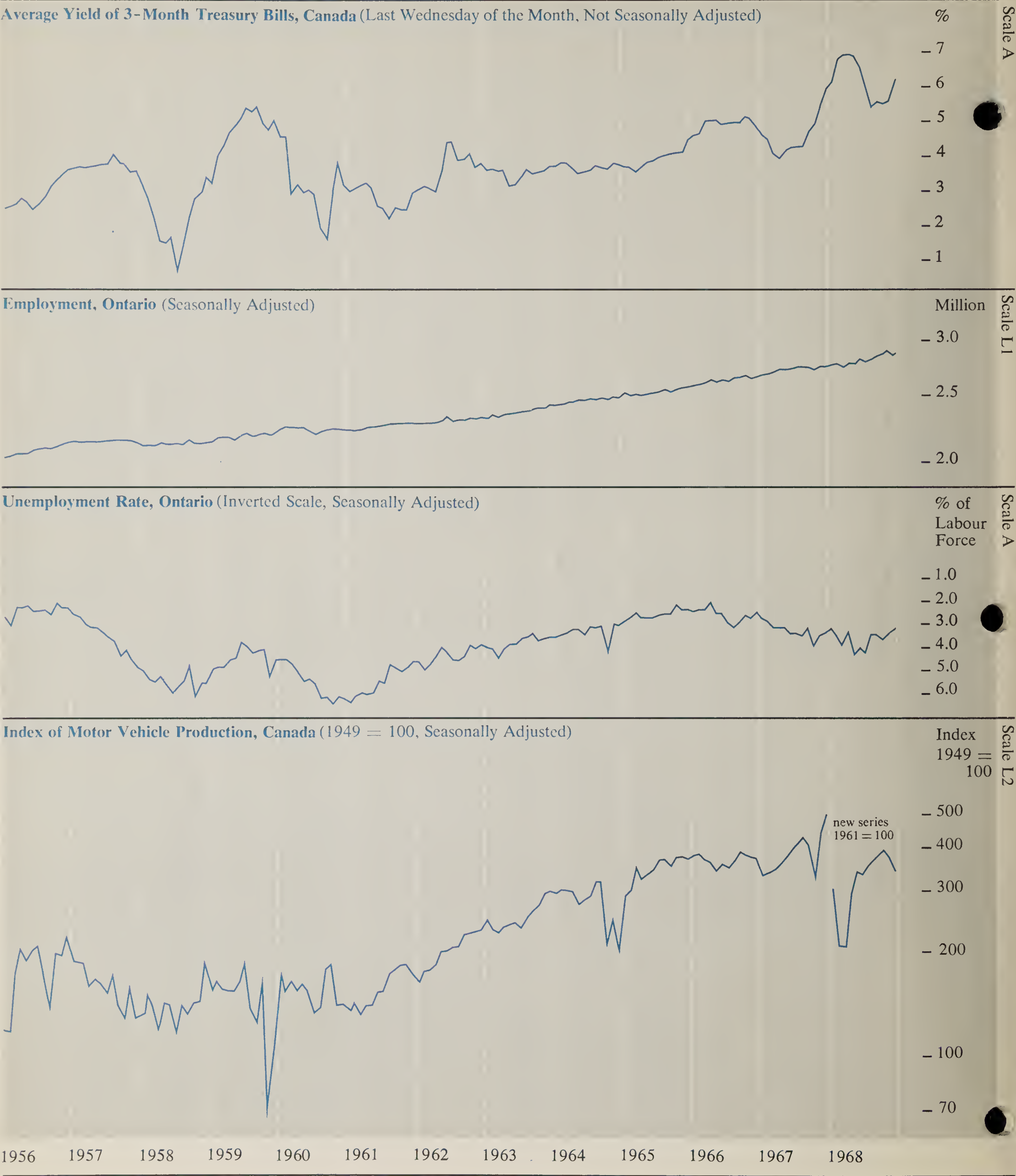


**Average Hourly Earnings in Manufacturing, Ontario** (Seasonally Adjusted)





# Coincidental and Lagging Indicators





# Economic Indicators

17

Seasonally Adjusted

		1968												1969	
		Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
<b>Leading Indicators</b>															
Average Weekly Hours Worked in Manufacturing	Number	39.9	40.5	39.6	40.6	40.7	40.3	40.3	40.2	40.6	40.6	40.7	40.1		
New Orders in Manufacturing Industries <sup>c</sup>	\$ Million	3,225	3,161	3,191	3,276	3,360	3,349	3,377	3,420	3,601	3,581	3,577	3,430	3,524	
Business, Industrial and Engineering Construction Contracts	\$ Million	105.4	111.3	104.6	107.1	123.4	129.3	97.7	101.8	107.8	154.4	125.0	155.0	115.1	
Urban Housing Starts (Annual Rate)	Number	76,300	72,200	79,400	69,200	63,200	60,800	61,900	63,900	48,900	73,400	83,500	98,200	80,800	109,700
Money Supply <sup>c</sup>	\$ Million	24,149	24,479	24,682	24,972	24,987	25,400	25,846	26,314	26,702	26,827	27,226	27,464	27,580	27,953
T.S.E. Industrial Index <sup>u</sup>	1956 = 100	157.43	150.24	146.88	160.43	157.87	166.61	165.93	169.02	176.37	179.61	187.29	188.93	192.47	185.20
Business Failures <sup>u</sup>	Number	54	59	87	52	50	46	49	28	36	46	48	34	57	
Business Failures — Liabilities <sup>u</sup>	\$ Million	2.6	1.8	5.6	6.4	2.8	6.6	2.9	1.3	1.5	2.1	2.5	1.2	2.9	
<b>Coincidental and Lagging Indicators</b>															
Gross National Product <sup>c</sup> (Annual Rate)	\$ Million			65,168			66,328			67,824			70,152		
Average Hourly Earnings in Manufacturing	Dollars	2.59	2.58	2.60	2.67	2.68	2.67	2.71	2.76	2.78	2.78	2.79	2.81		
3-Month Treasury Bill Rate <sup>c,u</sup>	Per Cent	6.29	6.80	6.98	6.99	6.95	6.56	6.03	5.48	5.66	5.57	5.66	6.24	6.38	
Cheques Cashied in Clearing Centres <sup>1</sup>	\$ Million	5,006	4,959	5,313	5,031	5,448	5,199	5,381	6,034	5,065	5,821	5,907	5,885	5,698	
Retail Trade	\$ Million	803	768	780	785	779	804	840	835	850	851	862	853	879	
Labour Force	000's	2,857	2,892	2,869	2,890	2,918	2,962	2,948	2,937	2,959	3,002	3,026	2,977	3,010	3,037
Employed	000's	2,769	2,793	2,760	2,796	2,796	2,844	2,825	2,837	2,858	2,890	2,923	2,879	2,928	2,947
Unemployed	000's	88	99	109	94	122	118	123	100	101	112	103	98	82	90
Unemployed as % of Labour Force	Per Cent	3.1	3.4	3.8	3.3	4.2	4.0	4.2	3.4	3.4	3.7	3.4	3.3	2.7	3.0
Wages and Salaries	\$ Million	1,111	1,103	1,107	1,130	1,141	1,141	1,142	1,157	1,186	1,198	1,223	1,223		
Index of Industrial Employment	1961 = 100	126.3	124.2	125.5	126.0	125.8	124.0	124.1	125.4	126.7	127.8	128.6	129.3	130.0	
Index of Industrial Production <sup>c</sup>	1961 = 100	153.8	153.9	154.9	156.8	158.4	160.1	159.5	159.3	161.6	162.9	165.1	166.2	164.8	166.0
Total Manufacturing <sup>c</sup>		153.0	152.2	154.0	156.4	158.1	159.7	157.8	158.0	161.3	162.5	165.2	166.0	163.3	165.4
Non-Durables <sup>c</sup>		138.8	141.9	145.7	143.5	142.8	146.1	142.1	139.8	142.8	144.0	147.6	150.9	147.5	150.1
Durables <sup>c</sup>		170.4	164.8	164.2	172.2	176.8	176.2	177.0	180.2	183.9	184.7	186.7	184.4	182.6	184.1
Mining <sup>c</sup>		145.8	152.8	152.4	153.3	153.1	154.6	156.1	154.3	152.9	155.0	155.4	153.9	158.1	157.6
Electric Power and Gas Utilities <sup>c</sup>		172.9	170.0	166.6	165.7	169.1	172.1	179.9	179.0	177.5	179.6	179.7	186.4	188.3	184.3
Primary Energy Demand (Annual Rate)	BKWH	55.60	55.15	54.01	53.94	53.81	53.83	55.92	55.69	54.83	57.09	57.89	59.81	59.83	
Exports (including re-exports) <sup>c</sup>	\$ Million	1,077.7	1,140.4	1,125.7	1,165.3	1,097.2	1,115.9	1,063.5	1,103.5	1,115.0	1,176.4	1,203.2	1,202.4	1,215.0	1,306.0
Imports <sup>c</sup>	\$ Million	974.5	1,093.9	970.9	1,026.6	992.2	962.7	927.3	963.0	1,092.1	1,127.2	1,084.3	1,106.0	1,163.0	1,221.0
<b>Unclassified Indicators</b>															
Foreign Exchange Reserves <sup>c,u</sup>	U.S. \$ Million	2,175	2,490	2,244	2,416	2,695	2,574	2,515	2,590	2,534	2,525	2,672	2,827	2,864	2,820
Industrial Materials Price Index <sup>c,u</sup>	1935-39 = 100	253.5	252.4	253.0	251.2	252.0	253.0	253.4	254.2	253.4	256.8	257.1	258.9	261.4	264.6
Consumer Price Index <sup>c,u</sup>	1961 = 100	118.1	118.2	118.6	119.3	119.3	119.7	120.4	120.7	121.1	121.4	121.9	122.3	122.6	122.6

<sup>c</sup>Statistics for Canada.

<sup>u</sup>Not seasonally adjusted.

<sup>1</sup>Ontario less Toronto.



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# Ontario Economic Review

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May/June 1969  
Volume 7, Number 3

Department of Treasury and Economics

Hon. Charles S. MacNaughton, Treasurer of Ontario  
and Minister of Economics

H. Ian Macdonald, Deputy Minister



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1969  
VOL. 7  
NO. 3

# Ontario Economic Review

May/June 1969

Volume 7, Number 3

## The Ontario Economy

## The Reform of Taxation and Government Structure in Ontario

Taxation and Fiscal Policy Branch  
Department of Treasury and Economics

## Selected Economic Indicators

A publication of the  
Department of Treasury  
and Economics  
Government of Ontario

Hon. Charles S. MacNaughton  
*Treasurer of Ontario and  
Minister of Economics*  
H. Ian Macdonald  
*Deputy Minister*

The *Ontario Economic Review* is prepared and edited bimonthly in the Economic Analysis Branch of the Economic and Statistical Services Division, Department of Treasury and Economics. The review presents articles of interest as well as current information on economic activity in Ontario. Signed articles reflect the opinions of their authors and do not necessarily represent the views of the Department.

Subscriptions can be obtained free of charge by writing the Editor, *Ontario Economic Review*, Department of Treasury and Economics, Frost Building, Queen's Park, Toronto 5, Ontario.

### About the Review

The feature article for the May-June edition of the *Ontario Economic Review* presents the Provincial Government's long-term program for basic reform of taxation and government structure in Ontario. The article is based on a white paper contained in the 1969 Annual Budget Statement of the Hon. Charles MacNaughton, Treasurer of Ontario and Minister of Economics.

The primary objective of this program is to provide a more equitable and viable financial basis for the development of provincial and municipal operations in future years. Concrete steps will be taken to integrate provincial-municipal tax systems and to permit a more systematic control of the level and distribution of tax burdens. A series of measures will also be advanced to strengthen and modernize the financial and functional structure of the municipal sector of the Ontario governmental scene.

The article was prepared under the direction of Dr. T. M. Russell in the Taxation and Fiscal Policy Branch, Policy Planning Division of the Department of Treasury and Economics.

### Indicator Charts, Pages 10-12

Fluctuations in aggregate economic activity — commonly used to define business cycles — do not necessarily correspond with fluctuations in the individual activities which make up the aggregate. Instead different indicators of economic activity may vary with respect to both their rates of growth and the timing of their peaks and troughs: some may grow more rapidly than others, some change direction sooner.

Those activities which tend to assume a direction in advance of the aggregate — because they relate to future rather than present production — are referred to as leading indicators, and are widely used to anticipate the short-run future course of the overall economy. The charts on pages 10-12 in the *Ontario Economic Review* present a number of these leading indicators, as well as several which are coincidental to or lag behind the aggregate, to provide for the reader an opportunity to make such an evaluation.

While comparisons of the timing and direction of general changes in the various indicators can readily be made, great care must be exercised in making such a comparison of the amplitude of fluctuations. Of the three vertical scales used — 'A' (arithmetic) and 'L1' and 'L2' (logarithmic scales with one and two cycles respectively over a given vertical distance) — only the logarithmic scales can be used to compare relative changes in different indicators. *And this applies only when all series being compared are on the same logarithmic scale.* In such a situation all parallel lines represent equal rates of growth, the exact rate of growth being determined by the slope of the line.



In the first quarter of 1969 the economies of Ontario and Canada enjoyed a continuation of the strong performance which characterized the final months of 1968. However, accompanying this strength was the continuing problem of large price increases.

Despite a movement by the federal authorities in both Canada and the United States toward greater restraint the Canadian consumer price index rose sharply in both March and April to levels of 123.2 and 124.6 respectively. The March/April increase of 1.1 per cent represents the highest monthly increase since June 1956. In February, the index remained unchanged from its January level of 122.6 and in earlier months the rate of increase was well below one-half of one per cent. In July of 1968 the index rose by six-tenths of one per cent. During the past four months, the consumer price index has also shown a faster rate of year-to-year increase. April prices this year were 4.4 per cent higher than in April 1968. March prices were up 3.9 per cent, February prices up 3.7 per cent and January prices 3.8 per cent higher than the corresponding level in January 1968.

In Ontario, the latest monthly increases are attributable to higher sales and excise taxes on tobacco and alcohol and sharp gains in the health and personal care, food, housing and transportation components. The 3.2 per cent April increase in the health and personal care index is attributable to increased private prepaid medical care premiums and higher doctor, dentist and optometrist fees. The ten per cent sales tax charged on restaurant meals costing more than \$2.50, effective April 1, contributed to a higher than average rise in the food index. Another contributor to the increased index this year is the price of building materials which have recorded sizable gains. Lumber prices, caught by accelerated housing construction on the one hand and a supply shortage (due to adverse winter conditions in British Columbia) on the other, have risen 10 to 15 per cent over the corresponding period last year.

The strong pace of business activity in Canada and particularly Ontario is evidenced by the rapid growth of the labour force and the relatively low unemployment rates. In Canada, in the first quarter the labour force was an average of 4.2 per cent larger than was in the same period one year earlier. Employment meanwhile, rose by 4.7 per cent with the result that the seasonally ad-

justed rate of unemployment fell from 4.9 per cent in the fourth quarter of 1968 to 4.2 per cent in March of 1969. In April the unemployment rate rose fractionally to 4.4 per cent of the labour force which could be an indication that government anti-inflationary policies are finally beginning to take effect. However, this could also be misleading. What has been happening under similar conditions in the United States is that large numbers of housewives and teenagers have been attracted into the labour force by available employment and record wages and thus have raised the jobless rate.

In Canada, between March and April, total employment rose by 158,000 to 7,629,000 and the labour force at 8,061,000 was up by 142,000 an above-average monthly increase for this time of year. Compared to a year earlier, the labour force was larger by 349,000 or 4.5 per cent and employment showed a considerable gain of 353,000 or 4.9 per cent.

In Ontario, in the first four months of 1969 the labour force was an average of 5.1 per cent larger than one year earlier. Employment during this period rose on average by 5.7 per cent and the unemployment rate dropped from an average seasonally adjusted level of 3.4 per cent for the four-month period in 1968 to a level of 2.8 per cent for the corresponding period in 1969.

The continued high level of housing starts in the province suggests that, barring prolonged strikes, employment in this sector of the construction industry will be well sustained throughout the first half of 1969. Ontario urban housing starts during March totalled 4,769 units, compared with 4,635 units in the preceding month and up 41 per cent from the March 1968 level of 3,384 according to recent data released by Central Mortgage and Housing Corporation.

At the close of 1968 it was expected that housing starts would begin to fall off, since the bulk of funds made available in the fall had already been used up in the immediately following period of accelerated construction activity. But this has not been the case. Canada's average seasonally adjusted housing starts reached an annual rate of 275,000 units in the first quarter of 1969 compared to a high of 231,100 units in the preceding quarter. Cumulative 1969 starts in Ontario for the first quarter rose to 13,587 units, up 56 per cent from the 1968 period. CMHC reports that multiple units accounted for all

but 20 per cent of the March urban starts which represent an annual rate of 102,400 units compared with a rate of 78,200 in March of 1968. Final figures for January and February show an increase in total Ontario urban starts to 8,818 units from 5,325 in the 1968 period.

Toronto starts were ahead 1,630 units, but the percentage of Ontario housing starts accounted for by Toronto in the first three months of 1969 dropped to 50 per cent from 56 per cent in 1968. Windsor, Ottawa, Kitchener, Kingston, Oshawa, Sudbury and Guelph had increases of more than 100 per cent in housing starts for the first three months. Declines in starts were recorded for London, Brampton, Georgetown and Chatham for the January to March period.

While expansion has been strong on many fronts, it has been particularly so in merchandise exports. It can safely be said that the continued outstanding growth of merchandise exports is due to the persistent strength of U.S. demand. Operating at a high level of capacity, with unemployment rates the lowest in years, the buoyancy of U.S. demand for consumer goods has significantly contributed to lifting total Canadian exports to \$3,463.7 million in the first quarter, 15.1 per cent above the first quarter of 1968. While exports to the United Kingdom declined by 4.7 per cent to \$282.8 million those to other Commonwealth and preferential countries rose slightly to \$135.1 million. By far the largest growth in sales was accounted for by purchases from the United States which rose by \$422.4 million to \$2,477.2 million.

Imports in the first three months increased by 16.2 per cent to \$3,265.5 million from \$2,810.0 million in the corresponding period in 1968. Purchases from the United Kingdom rose by 9.2 per cent to \$173.5 million, and from other Commonwealth and preferential countries by 21.3 per cent to \$94.0 million. Imports from the United States rose by 16.6 per cent to \$2,487.5 million and from other countries by 15.8 per cent to \$510.5 million.

Preliminary data on Canadian Trade for the month of April indicate a substantial reduction in the growth of exports. Total exports for April rose by only 1.5 per cent to \$1,196.2 million from \$1,178.1 million in April of 1968. This is in sharp contrast to the 19.4 per cent year-to-year increase in March. Moreover, April exports to the U.S. increased by only 7.0 per cent on a year-to-year basis as opposed to the 24.5 per



cent March 1968 to March 1969 increase. Exports to the U.K. fell by 13.1 per cent and those to other Commonwealth and preferential countries decreased by 15.2 per cent.

Imports in April continued to advance strongly gaining 14.4 per cent, or more than \$155 million to \$1,246.7 million. The largest increase remained in trade with the United States, where imports rose by 15.4 per cent to \$912.2 million from \$791.8 million in April 1968. Imports from the U.K. decreased by 6.2 per cent and increased by 11.4 per cent from other Commonwealth and preferential countries.

Another strong performer in the first quarter of 1969 has been the Canadian steel industry. Production has been running at an unexpectedly high level causing industry forecasters to revise upward their estimates of output for the year — assuming that strikes are not encountered. Until recently, the standard forecast was that ingot production would fall 300,000 to 500,000 tons below the record 11.1 million tons poured in 1968, when U.S. consumers were buying heavily in anticipation of a steel strike. However, in the first three months of 1969 Canadian mills have turned out 2,903,000 tons of steel ingots, seven per cent above the high 1968 level. Steel officials have also indicated that orders in hand and commitments being made should maintain production levels through the second and third quarters of the year.

While much of the early advance may be attributable to anticipated steel industry strikes early this summer consumption has also increased with preliminary construction figures now suggesting that the total value of new contracts awarded in the first quarter rose by more than 25 per cent from the similar 1968 period. This represents a considerable increase from the cautious eight per cent twelve-month expansion forecast for 1969. It is obvious that this first-quarter increase will not be maintained throughout the year, however, it would seem to indicate that construction users are anxious to have labour and materials committed to their projects in anticipation that supplies might be tight later in the year. It could also be said to reflect the strong push generated by the forecast nine per cent growth in private and public investment in 1969.

The 1969 investment program as summarized in the recently released official

estimates<sup>1</sup> forecasts an increase of \$1.4 billion in private and public capital spending. The annual survey covers business establishments, institutions, all levels of government and housing and is designed to provide an indication of investment intentions on the whole, during the current period of economic activity. In the past the survey has tended to understate the magnitude of the actual advance in investment expenditures. However, there are indications in the existing economic climate which suggest that this year the reverse may be true.

The capital program planned for 1969 represents an advance of 8.7 per cent over the expenditure program of \$15.7 billion in 1968 and sharply contrasts with the slowing down in investment in 1967 and 1968 when total capital outlays rose by only approximately two per cent per annum. However, the forecast increase does not rival the high rate of growth achieved in the 1962-66 period. In the early 1960's, when vigorous efforts were being made to build a stock of plant and equipment as the economy moved to more fully utilize its resources, capital spending rose very rapidly averaging 15 per cent annually. While the rate of gain indicated for 1969 is more moderate than that of 1962-1966 it does appear that investment spending may now be rising more in line with the growth that can be anticipated for the economy as a whole.

Increases in capital spending are planned in almost all major sectors of the Canadian economy in 1969. Plans of business involve a rise of almost eight per cent in outlays over those of 1968. Social capital spending by institutions and government departments is also expected to increase by nearly eight per cent, while outlays for housing are likely to be more than twelve per cent greater than those of the previous year. This is a slower rate of growth than last year, when housing outlays totalled \$2.88 billion or 21 per cent more than 1967. The most important change from trends in recent years is in the business sector, where the increase of eight per cent now planned follows two consecutive years of decline in business investment. The gains expected in social capital spending are little different from those which occurred in 1968.

The sharpest reversals in trend in 1969 within the business sector occur in the commodity producing industries and in the trade

and commerce sectors. Outlays by the commodity producing industries are expected to increase by slightly more than seven per cent in 1969 compared with a drop in spending of eight per cent in 1968. Capital spending by manufacturers is expected to increase almost 15 per cent after a decline of almost 13 per cent last year. The most substantial increases here are expected to occur in the primary metals, transportation equipment and petroleum refining industries.

The report indicates that capital spending plans will increase in every major economic region of the country. The greatest increase will occur in Ontario, where spending will rise an estimated 15.5 per cent to \$6,379.2 million. The next highest intention being an 11-per-cent increase in the Atlantic Provinces.

Total manufacturing activity in Ontario is estimated to increase by 31.6 per cent from the preliminary actual level of \$1,000.5 million in 1968 to \$1,316.8 million in 1969. Business activity will increase by almost 25 per cent, utilities by 17 per cent and housing by an estimated 15 per cent whereas institutional services and government departments have indicated a low 3.4 per cent increase in capital spending in 1969.

The survey of intentions reflected by the official report was of course compiled around the beginning of the new year. It seemed reasonable at that time, and indeed still seems reasonable to expect that with continued steady growth in both domestic demand and export markets an expansion of the magnitude outlined above would be in order. At that time, too, there was widespread hope that the forces of inflation, both in Canada and the United States were gradually being brought under control.

However, the anticipated signs of cooling have been slow to appear and in response to the continued strong expansion monetary policy both here and in the United States has become more restrictive. It would therefore seem that any necessary financing for expansion not already arranged will have to be sought in a considerably different climate than originally envisioned. This will undoubtedly result in the postponement of some programs and perhaps only the partial completion of others resulting in a somewhat lower level of capital expansion than originally intended.

<sup>1</sup>DBS and Department of Trade and Commerce, Ottawa, Private and Public Investment in Canada, Outlook 1969.



# The Reform of Taxation and Government Structure in Ontario

Taxation and Fiscal Policy Branch  
Department of Treasury and Economics

## INTRODUCTION

The Government of Ontario is convinced that fundamental fiscal and structural reforms are necessary and urgent in this province. Both the Ontario Committee on Taxation and the Select Committee on Taxation proposed extensive reforms.<sup>1</sup> After examining the reports of these committees and studying thoroughly their recommendations, the Government presented its own views in a White Paper. In brief, this article describes the Government's reform objectives and its long-run plan for achieving those objectives as set out in the White Paper. The plan calls for complementary and concurrent reforms on four fronts: reform of the provincial tax system, reform of provincial aid to local governments, reform of local taxation, and reform of local government structure.

## REFORM OF THE PROVINCIAL TAX SYSTEM

The Government of Ontario is planning a major redesign and reform of the provincial tax system. This is necessary because the present system is demonstrably deficient in terms of its equity, efficiency, and capacity to raise necessary provincial funds in the years ahead. The program of provincial tax reform will seek to achieve three broad objectives:

- to establish a fairer, more balanced and more revenue-productive system of provincial taxation;
- to connect, in a coordinated manner, the provincial and municipal tax systems to allow control over the level and distribution of overall tax burdens;
- to harmonize and rationalize provincial and federal taxation in Ontario to the maximum extent possible.

The reform plan, as set out, calls for extensive changes in existing provincial taxes. Some of these changes have already been implemented in the 1969 budget; others will be brought into effect over a number of years. The plan also suggests trade-offs between the Province and Ottawa in the shared-tax fields. Realization of the intended realignments in the shared-tax fields will depend, of course, on positive reception and reaction by the federal government. The key element in the reform plan, however, is the establishment of a personal income tax system for Ontario. This fundamental departure from the present character of provincial taxation is the core around which Ontario's new tax system will be developed.

## A Provincial Income Tax

The Ontario Government intends to establish its own personal income tax system within the next two years. This move to an independent income tax is necessary to preserve the Province's fiscal integrity and to achieve meaningful tax reform in Ontario.

Three developments have led to this decision: the Province's need for greater access to fast-growing revenue sources in order to maintain its existing programs and undertake essential reforms; the impasse in federal-provincial tax sharing; and the inadequacy of the present income tax abatement system to serve Ontario's long-run finance and reform objectives. The first two of these factors have been extensively studied and debated since 1966. Federal-provincial studies and the Province's own projections provide ample documentation that Ontario needs additional tax room in the personal income tax field merely to carry on its existing programs and existing level of support to municipalities. Ontario's responsibility to carry forward provincial programs on the scale required and to increase municipal support magnifies this need for growth tax revenues. Similarly, the Federal Government's adamant refusal to contemplate a more realistic sharing of income tax revenues is now an accepted platitude. The third consideration, however, warrants more detailed explanation.

Public discussion has often appeared to suggest that the people of Ontario do not presently pay provincial income tax. In fact, the people of Ontario have been paying a provincial income tax for many years. The present provincial income tax is equal to 28 per cent of the federal basic tax, and is collected by Ottawa and returned to the Province. Moreover, if the Federal Government were willing to accept our offer whereby the Province would assume complete responsibility for certain shared-cost programs in exchange for an additional 20 points of personal income tax, the two governments would have virtually equal occupancy of this field. In any event, under the present income tax abatement system, Ontario is severely limited in terms of the revenues it can realistically derive from the fast-growing and progressive personal income tax field. In the first place, the Federal Government has effectively preempted any significantly increased provincial effort by its own heavy use of this field in recent years. Secondly, the collection agreements which govern this shared-tax field restrict the provinces to across-the-board rate

increases when they want to increase income tax revenues. The Federal Government, meanwhile, reserves to itself all the scope for raising revenues through changes in the tax base and in the progressive rate structure. At a time when overall income tax rates are already very high, these latter avenues surely are superior to further across-the-board rate increases.

The present system also denies the Province any role in determining the structure and method of income taxation appropriate for Ontario. In this Government's view, the present system is grossly deficient in terms of equity and simplicity. The recent imposition of the retrograde Social Development Tax has seriously compounded these defects. Judging by the Federal Government's unilateral approach to tax reform, there is no assurance, moreover, that Ontario will have any more of a voice in the upcoming reform of this vital tax area. The present income tax system, therefore, is clearly not working in Ontario's interests, either present or future.

The new personal income tax system, which the Government plans to establish, will have the following features:

- it will aim for greater simplicity and greater progressivity than the present system;
- it will be structured to produce significantly increased revenues and thereby improve the growth potential and the progressivity of Ontario's overall tax mix;
- it will be designed as an integrated personal income tax-tax credit system which coordinates provincial and municipal taxes and allows control over the level and distribution of overall tax burdens;
- it will be both a collection and a payments mechanism, which could eventually be adapted to replace income maintenance programs.

Integration will be achieved through provisions for the deduction of taxes paid by individuals in other provincial and municipal fields from their tax liability under the provincial personal income tax. For example, it will be possible to replace the present Basic Shelter Tax Exemption payments by property tax credits. Such an arrangement would be superior to the present practice in two respects. First, it would channel property tax relief directly back to all taxpayers — homeowners and tenants. Second, the tax credit system offers more scope for redistributing property tax burdens. For example, the property tax credits could be designed to vary

<sup>1</sup>See Report of the Ontario Committee on Taxation (Toronto: Queen's Printer, 1967) commonly referred to as the Smith Committee and The Report of the Select Committee of the

Legislature on the Report of the Ontario Committee on Taxation (Toronto: Government of Ontario, 1968), commonly referred to as the Select Committee.



with income and family size or could have an upper income cut-off point. Eventually, this form of integration could be extended to incorporate tax credits against payments of retail sales taxes, health insurance premiums, and other provincial taxes which are regressive in impact. An essential adjunct of this integrated personal income tax-tax credit system would be a rebate mechanism to pay refunds to those taxpayers whose total credits exceed their total personal income tax liability. Such a procedure would represent a move toward a positive income supplement or guaranteed income scheme.

To sum up on the personal income tax, Ontario has decided to establish its own system of personal income taxation rather than continuing with the present abatement system. This course of action will allow the Province to raise necessary provincial funds on a fair and efficient basis. It will open up new scope for the systematic integration of overall provincial-municipal taxation in Ontario and lessen the burden of property taxes on those least able to pay. Whether the Federal Government is willing to continue co-operation in collection under this new system will be a matter for negotiation. Obviously, a single collection agency for both levels of government would be desirable. Recent events in Ottawa suggest that the Department of National Revenue may be replaced by a tax-collection commission. We would suggest that consideration be given to establishing a federal-provincial tax collection commission, as a joint body to serve both levels of government. On the other hand, the absence of such cooperation certainly will not inhibit the implementation of a new income tax system in Ontario.

### **Taxation of Capital Gains**

The Ontario Government intends to tax capital gains when it introduces its provincial income tax. The Government believes that capital gains must be brought into the tax system in order to achieve greater equity between taxpayers with equal incomes and among taxpayers at different income levels. It is recognized that taxation of capital gains could reduce private savings and economic growth in Ontario. However, this potential economic disadvantage is far outweighed by the positive improvement in equity and consistency to be gained by taxing capital gains.

It is Ontario's view that capital gains should be taxed on a uniform basis all across Canada. This requires either a fully inte-

grated system of provincial capital gains taxes, a system of federal and provincial capital gains taxes or a purely federal tax, the revenue of which is shared with the provinces. Ontario is prepared to discuss these options with the Federal Government and the other provinces to ensure that a harmonized overall system is developed. If the Federal Government is not prepared to tax capital gains (either in concert with the provinces or on behalf of the provinces as well as in its own right), Ontario, nevertheless, intends to go ahead in this field. In this eventuality, Ontario's rates would have to be nominal, at least until such time as other provinces entered the field.

Ontario believes that the United States capital gains tax provides a reasonable model for designing a capital gains tax appropriate to Ontario and to Canada. Thus, the kind of tax that is envisaged would have the following features:

- taxation of gains when they are realized and upon death or emigration;
- deductibility of losses as an offset against capital gains income;
- no discounting of gains to allow for inflationary effects;
- exemption of gains on homes and other specific forms of real property, up to a lifetime limit, with periodic reassessment of this limit;
- distinction between short-run speculative gains and long-run investment gains;
- concessionary rates of tax on long-run gains and, certainly, rates that are no higher than in the United States;
- fair averaging provisions, both forward and backward.

A capital gains tax structured along these lines would minimize adverse economic effects and be administratively workable, while at the same time increasing government revenues and making the overall tax system more equitable.

### **Succession Duties**

The new federal Estate Tax Act limits the range for modification and reform in Ontario's succession duties. Ontario strongly believes that these two taxes should remain as compatible and as harmonized as possible. If the Province were to go its own way in developing the death tax field, as Ottawa has done, the end result could be confiscatory total tax levels, capricious overall tax consequences and a disproportionate allocation of private resources devoted to compliance and

evasion. The responsible options left open to Ontario in respect of succession duties, therefore, narrow down to two: retain the provincial tax and bring it into conformity with the new federal tax, or relinquish the tax field to the federal government in exchange for equivalent revenue. Ontario proposes to relinquish its succession duties in exchange for 75 per cent of the revenues that will accrue in Ontario from full application of the new federal Estate Tax Act.

As capital gains taxation becomes fully mature in the years ahead, undue accumulations of wealth will be moderated. In Ontario's view, therefore, the need for taxation of estates will diminish and such taxation should be gradually eliminated. This could be achieved by the Federal Government, through increases in its level of exemptions, or by the provinces through forgiveness or refund of their shares of estate tax revenues.

### **Taxation of Gifts**

With a provincial income tax, it would be feasible for Ontario to establish a provincial gift tax. There is little rationale for such a gift tax, however, once the Province moves out of the succession duties field. Moreover, a provincial gift tax on top of the new federal gift tax would push rates to punitive levels. Ontario, therefore, does not intend to establish its own gift tax.

The Province strongly contends, however, that gift tax revenues should be shared with the provinces. Since the Federal Government views gifts primarily as reductions in the size of estates eligible for estate taxes, then it is only fair that the provinces share in gift tax revenues to the same extent that they share in estate tax revenues, which is 75 per cent. Again, integration and harmonization to avoid duplication and excessive taxation is the desirable goal.

### **Corporation Income Tax**

Ontario's corporation income tax closely parallels Canada's corporation income tax in terms of structure and design. The Province believes that this conformity must be maintained in future, both for reasons of neutrality and simplicity.

On the side of administration and collection, the Province is considering a major change. The Carter Commission, Smith Committee and Select Committee all recommended that administration and collection of the corporation income tax be turned over to the Federal Government. This Govern-



ment is persuaded by the obvious merits of such a step. There is no question that administration and collection of corporation income taxes would be more efficient and certain if handled only by a central authority. Personnel from both the provincial corporation tax and succession duties areas would become available to launch the new provincial income tax administration. Before reaching any final decision to turn over corporation income tax collection to the Federal Government, however, Ontario must be assured that the interests of corporate taxpayers as well as its own interests, and particularly its revenues, will not suffer.

The sales tax on production machinery and the higher capital taxes announced in the 1969 budget will raise Ontario's overall level of taxation on corporations substantially. This increased burden was necessary because the business sector, like all other taxpayers, must carry its fair share of revenue-raising measures. Looking to the future, however, it is apparent that there is little remaining tolerance for further increases in corporate taxation, except perhaps in corporation income tax rates. It must also be recognized that Ontario's rates cannot move far out of line with those in other jurisdictions, both in Canada and abroad, if the province is to remain competitive. Moreover, various studies have supported the contention that such increases are ultimately reflected in the price paid by consumers for goods and services.

### **Mining Taxation**

The Government believes that the mining industry has been taxed too lightly in relation to the taxes borne by other industries and sectors of the Ontario economy. The increase in mining tax announced in the 1969 budget aims to correct this defect and to secure for all the people of Ontario the revenues which should logically accrue to them from this province's natural resources.

In addition to establishing a proper level of provincial taxation on mines, the plan for reform in this field calls for municipal taxation of mining properties. Beginning in 1970, mining municipalities will be empowered to levy property tax on smelters and other processing facilities. Assessment of these processing facilities is now under way and scheduled for completion before the end of 1969. When fully in effect, this change will add over \$10 million a year to the revenues of mining municipalities. Ultimately, many municipalities in the north will share in this additional

fiscal capacity through the formation of regional school boards and regional governments. In the meantime, the Province will continue to make payments to mining municipalities out of its general revenue, though at a reduced level and through a revised formula which includes mining workers engaged in extraction operations only. This new approach to mining taxation will result in net benefits to mining municipalities and in broad benefits to Ontario taxpayers in general.

### **Retail Sales Tax**

Ontario's long-run financial needs dictate that the retail sales tax remain a major and growing source of revenue for the Province. Both the Smith Committee and the Select Committee recognized this inescapable reality. The thrust of reform in the sales tax area, therefore, must be to ensure that this additional revenue is raised in the most efficient and equitable manner.

Additional revenue from the retail sales tax can only be obtained by broadening the base and/or raising the rate. In this budget, the retail sales tax base was expanded to include three previously exempt areas: production machinery, hotel and motel accommodation, and movie tape and video tape rentals. This leaves little scope for further expansion of the base except in the area of services and necessities such as food. The Province does not intend to tax food, children's clothing and other necessities, at least until the regressive aspects of such taxation can be deliberately offset by tax credits and refunds under the provincial income tax. Nor does the Province envisage any great expansion in the area of services. The costs of proper administration and collection of the retail sales tax on many services would be high because of the number of vendors involved, while the additional revenues to be gained would be modest. To the extent that Ontario finds it necessary and desirable to derive additional revenue from sales taxation, therefore, it must come primarily through rate increases.

In the recent budget the retail sales tax rate on liquor, bottled beer and wine, and meals over \$2.50 has been increased to 10 per cent and taxation under The Hospitals Tax Act will be incorporated into The Retail Sales Tax Act. This represents a start in the direction of differential sales tax rates for selected commodities. The Province will continue to explore and develop this avenue before contemplating any general rate increase.

### **Other Provincial Taxes**

The 1969 Budget has introduced significant changes in other areas of provincial taxation. The tax on tobacco has been increased, gasoline tax refunds narrowed, and numerous minor changes made to remove nuisance features, reduce collection costs and streamline administration. In the years ahead, Ontario will continue to review and improve its tax policies in these and other provincial fields.

### **REFORM OF PROVINCIAL AID TO LOCAL GOVERNMENTS**

The Ontario Government recognizes that the local tax base carries too much of the financing burden for the provincial-municipal sector as a whole. This undue reliance on property taxation is clearly indicated by the continuing financial squeeze on municipalities and the increasing demands for provincial relief. In 1968 the Province undertook two major relief measures suggested by the Smith Committee, the Basic Shelter Tax Exemption payments and the takeover of the administration of justice, shifting approximately \$150 million of financing from the local tax base to the provincial tax base. These measures have relieved the pressure on mill rates but do not constitute adequate long-run support. A major reform objective of the Province, therefore, is to increase its financial support for local governments in order to reduce the burden of financing which falls upon the slow-growing and oppressive property tax.

### **Increased Provincial Grants for Education**

As a first step, Ontario intends to raise its average level of support for elementary and secondary education to 60 per cent over a three-year period, beginning in 1970-71. Presently, the Province's legislative grants provide about 45 per cent of school board finances. This increase in provincial support of education from 45 to 60 per cent will represent a permanent shift in financing from the local tax base to the provincial tax base. The cost of this shift is estimated to run from \$175 million to \$250 million annually, by the end of the phase-in period.

The primary purpose of the Province in assuming this increased share of education financing is to permit some compensating reduction in school board levies. In other words, the increase in provincial taxation for school support is expected to be offset substantially by reduced local taxation for school financing. To realize this desirable reduction in local levies, it is imperative that the higher



provincial grants be accompanied by restraint in school board spending. In the past, increased provincial grants have been translated almost entirely into higher total expenditures on schools. This need not be the end result in future, however, because enrolments will level off over the next few years. If school boards do not exercise voluntary restraint in spending, this Government will consider establishing machinery, such as a budget review board, to ensure that increased financial aid from the Province is passed on to the local taxpayer.

With increased provincial support of school board costs, there is the concomitant requirement of allocating the aggregate grant among the various school boards. Under present arrangements this is handled by the Ontario Foundation Tax Plan formula. This formula will have to be revised in order to generate and distribute the higher level of provincial grants among the new school board units which were established this year.

#### **Other Grants to Local Governments**

The long-run goal of the Province is to assume a larger share of the financing for other local services as well. This cannot be achieved immediately because the Province simply does not have the financial resources to make increased transfers. As the new provincial tax system begins to produce additional revenues, however, some of these revenues will be transferred to local governments in the form of increased grants and payments. Again, if the end result is simply increased local spending, this will necessitate central review and control measures.

The Government is undertaking a comprehensive review of its grants and aid policies. As the Smith Committee pointed out, some grants are obsolete and others deserve new emphasis, while in aggregate the present system lacks coordination. The Province hopes to correct these imperfections and to develop a rationalized overall support policy. Two changes already mentioned are examples of the kind of improvements that will be sought. The Basic Shelter Tax Exemption payments will be replaced by some form of tax credits and refunds under the provincial personal income tax, and mining revenue payments will be reduced as some mining municipalities begin to collect their own revenues from mines. In redesigning its grants policies the Province also will seek to provide more of its total support in the form of unconditional grants, thereby allowing

local governments greater autonomy in their budgetary allocations.

Reform of the provincial grants system must inevitably be a long-run process. This is particularly so when the Province is working towards fundamental reforms in other related areas such as property assessment and regional government. The regional government program will simplify and assist the reform of provincial grants in two main ways. First, it will reduce the number of grant-receiving units. Second, the equalization which will occur within regions will reduce the need for equalization components in particular provincial grants. Assessment reform will also have a major bearing on the development of an improved grants system. At present the Ontario Government pays out to local governments approximately \$1 billion in grants which in one way or another are based on local assessment figures. Uniform and accurate assessment is vital, therefore, for an equitable distribution of these grants among local governments. Given these interrelationships, some time will be required before a fully adequate and coordinated grants policy can be formulated.

#### **REFORM OF LOCAL TAXATION**

Property taxation in Ontario stands in need of fundamental reform, perhaps more so than any other area. As the Smith Committee and the Select Committee so clearly pointed out, the present property tax is grossly unfair and inefficient. The proposed provincial actions to reduce the burden of financing that falls on the property tax and to offset its regressivity via personal income tax credits will substantially ameliorate these shortcomings. But reform of property taxation is still necessary and desirable, both in its own right and in order to facilitate and complement reforms in government structure and provincial grants. Therefore, the Government is determined to overhaul the entire system of property taxation and make it as equitable and efficient as possible.

There are four main policies to the Province's plan for reform:

- reassessing all real property at current value;
- broadening of the local tax base by removing exemptions;
- achieving a more neutral business assessment rate; and
- determining an appropriate distribution of tax burdens among classes of real property.

Of these, reform of assessment is the most crucial for it is the foundation upon which subsequent reforms in these other areas must be based.

#### **Province-Wide Reassessment at Current Value**

Current property assessment in Ontario is riddled with inconsistencies and inequities. Many properties are underassessed, some are overassessed and some are not assessed at all. Like properties are assessed at different values both within the same municipality and between municipalities. Moreover, there is no consistency among municipalities in the assessment treatment of particular classes of property. A class of property which enjoys low assessment and therefore a tax advantage relative to other properties in one municipality may be at a relative disadvantage in another municipality. The Ontario Government is convinced that the only way to remove these anomalies and inequities is to reassess all properties in Ontario at current value. It is the Province's aim to bring about uniformity of assessment all across Ontario in order to achieve equity among property owners, among property categories and among municipalities.

To remedy the serious existing problems in assessment, the Smith Committee recommended that Ontario provide more aid and incentives to the municipalities to improve their assessment practices. The Government has doubts that this approach would succeed without a complete change in management practices. It also believes that province-wide re-assessment can be achieved much sooner under provincial management than under local administration. Therefore, the Ontario Government has decided to assume full responsibility for the administration of property assessment. This will be done in two stages. On July 1 of this year, the Province will take over the assessment function in Northern Ontario with the exception of the districts of Kenora, Rainy River and Sudbury and the cities of Sault Ste. Marie and Fort William. On January 1, 1970 the remainder of the province will come under provincial jurisdiction.

This changeover will mean the absorption of present municipal assessment personnel by the Department of Municipal Affairs and assumption of present assessment costs by the Province. This will represent a saving to municipalities of approximately \$15 million, allowing a corresponding reduction in pro-



vincial grants. Following this immediate step, the Province intends to devote increased resources to the assessment function in order to ensure that the administration and quality of assessment is brought up to a proper level by the end of 1975.

Apart from the equity and efficiency considerations, this assessment reform will produce one major benefit to local governments themselves. Proper and systematic assessment will bring onto the rolls many properties that at present are not assessed at all or assessed on only part of their value. This will increase the revenues of the municipal sector and broaden the tax base against which future levies can be raised.

As the process of reassessment proceeds, the Province will consider the need for measures to cushion its impact. Present practices vary so widely that the move to a modern and equitable base is bound to involve financial hardships in some instances. While such hardships must eventually be borne if equity is to be achieved, temporary cushioning would smooth and ease these painful adjustments.

#### **Broadening the Local Tax Base**

The Government recognizes the desirability of broadening the property tax base by removing present exemptions and partial exemptions. Reform along these lines would have three very beneficial impacts on local finance. First, it would increase the revenue-raising capacity of the local government sector as a whole. Second, it would reduce intermunicipal fiscal disparities. Removal of exemptions would increase the assessment base of municipalities which presently have a high proportion of tax-exempt properties much more than it would for municipalities with a low proportion of tax-exempt properties. Third, it would shift some of the tax burden within each municipality from presently taxable to presently exempt properties.

The major classes of property that are presently exempt or partially exempt are private properties such as churches and YMCA's, institutional properties such as universities and hospitals, and government properties at the municipal, provincial and federal levels. The Province has already announced that it does not intend to remove the exemption for churches. The status of other private properties is currently under review. As for the other categories of exempt

properties, the Province believes it would be premature to eliminate exemptions before proper assessment of these properties has been undertaken all across the province.

In the long run, this Government hopes to be able to pay full local taxes on all the properties of the Province, its agencies and the institutions it supports. The Province's recent move to pay full grants in lieu of taxes on senior citizen housing units represents a modest start in this direction. However, full realization of this objective will not be feasible until revenues become available to finance such reform. This delay, moreover, will permit the Province to consider any relevant findings by the federal-provincial Subcommittee on Intergovernmental Taxation.

#### **A More Neutral Business Tax**

At present, commercial and industrial properties pay a supplementary business tax as well as a realty tax on their assessed value. This business tax applies different rates of business assessment (that is, different proportions of taxable assessment to total assessment) against different kinds of business; hence, it penalizes some businesses and favours others. As well, the present schedule of rates is replete with categories and definitions which may have been relevant fifty years ago but are totally obsolete and inappropriate today. The Government of Ontario believes that this discriminatory feature of local taxation should be removed. A major reform objective of the Province, therefore, is to establish a more neutral business tax on all commercial and industrial property.

This long-run goal cannot be achieved until all properties, residential as well as commercial-industrial, have been reassessed at current value. Only then will the Province be in a position to measure and evaluate the impact of business assessment rates on different businesses, on different municipalities and on municipal revenues in aggregate. As an interim measure, however, the Province is considering a reduction in the present number of business assessment rates, a narrowing in the present range of rates and a general modernization of the business tax legislation. A transitional reform along these lines would maintain an adequate business tax base during the reassessment period and, at the same time, reduce discrimination between different kinds of business.

#### **Distribution of Property Tax Burdens**

The local tax reforms already mentioned will work to redistribute property tax burdens in Ontario. For example:

- reassessment will generate major shifts in tax burdens among individual properties, among classes of property and among municipalities;
- to the extent that exemptions from property tax are narrowed, tax burdens will shift from presently taxed to presently exempt properties;
- movement towards a more neutral business tax will redistribute tax burdens among businesses, on a more equitable basis.

In addition, a number of the basic reforms in other areas will have significant impact on property tax burdens. Mine processing facilities will begin to bear property taxes. The increased provincial grants for education will reduce the tax burden on all properties. Regional school boards and regional governments will tend to even out property tax burdens within their respective boundaries. Finally, any personal income tax credits or refunds for property taxes paid will tend to reduce the ultimate burden of residential property taxes on those families and individuals who are least able to pay.

One remaining element of local taxation which affects the weight of tax between residential and commercial-industrial properties is the split mill rate. In principle, the Government favours the abolition of the split mill rate, as was recommended by both the Smith Committee and the Select Committee on Taxation. The Province is not contemplating such a change, however, until reassessment has been completed and the impact on municipal finances can be carefully examined.

Redistribution of property tax burdens could be brought about, of course, by prescribing new norms for various classes of property right from the outset. This is essentially what the Smith Committee and the Select Committee did in setting out new ratios of taxable assessment to total assessment for various classes of property. The Government is convinced, however, that such a policy would be premature and inappropriate. Given the chaotic and discriminatory state of assessment in this province, there can be no reasonable degree of certainty that any desired distribution among property classes would in fact work out in



practice. Moreover, the effects in individual municipalities of applying prescribed ratios of taxable assessment to total assessment may be substantially different from the effects for the province as a whole. The Province intends to push on with assessment reform, therefore, before attempting to establish any final distribution of tax burdens.

Within the overall field of property taxation there are some classes of property which merit special tax treatment. Transportation and communication properties, for example, must be considered separately from properties in general. The tax treatment of these special properties is still under review by the Province. Farm properties also require special treatment. Generally, the Government believes that the property tax on working farms should be considerably lower than on non-farm properties, because of the limited ability of working farms to pay taxes out of current income. Therefore, if property taxes on working farms show any significant increase when reassessment is introduced, the Province will consider interim measures to hold the line on farm tax burdens. This does not imply that the Government favours continuous tax concessions to all farms, including farms which are held and sold for land speculation. It simply reflects the Government's view that a capital gains tax is a better means of deriving the appropriate taxation from such farms rather than penalizing working farms with impossible property tax burdens.

## REFORM OF LOCAL GOVERNMENT STRUCTURE

Ontario has embarked on a long-run program to reorganize and reform its local government structure. This reform program seeks to achieve five major objectives:

- a strengthened and modernized system of local government;
- greater efficiency in the planning, administration and provision of local services;
- reduction of disparities among local governments in the level of services and taxation;
- return of powers to local governments from special-purpose boards and commissions;
- decentralization and regionalization of provincial programs wherever feasible.

The Province is working to realize these objectives by means of three interrelated and complementary policies: the creation of

larger school board units, the consolidation of existing local municipalities, and the establishment of a comprehensive system of regional governments.

The school board policy has already been legislated and implemented. As the new county boards of education become fully operational, some very positive results should begin to emerge. Education services in poorer and more remote areas will be upgraded; the property tax burden of school financing will tend to equalize within counties; and there will be a gradual improvement in the planning and provision of elementary and secondary education across the province as a whole.

The Province is also pursuing an active policy of municipal consolidation in order to reduce the total number of municipalities. A large number of local municipalities in Ontario are far too small to be viable units, either on their own, or within the lower tier of a regional system. Therefore, the Government is working towards a target of larger municipalities. This policy in itself will reduce tax imbalances and improve the efficiency of local governments. Normally, municipal consolidation will occur among lower-tier municipalities at the time of the establishment of a regional government. In areas where regional governments are not imminently planned, however, municipal consolidation will be encouraged on its own merits.

### Regional Government

The key element in the structural reform program is the establishment of a system of regional governments. These new units will be urban-based in character, to enable local government to cope more effectively with the problems and needs of Ontario's increasingly urban and urbanizing society and to provide a broader range of benefits to our rural areas. The new regional units will also operate on a much broader scale, thereby providing the strength and cohesion which is lacking in the present municipal structure. This strength of the new regional units has three dimensions:

- a geographic area large enough for proper physical and economic planning;
- a population large enough to achieve economies of scale in the provision of public services;
- a financial base adequate and diversified enough to support a reasonable level and range of services.

As regional governments are established, the Province expects to see major progress towards its structural reform objectives. Powers presently in the hands of special-purpose bodies can be turned over to the new regional governments or to constituent local municipalities. The overall efficiency of local government should improve. Intermunicipal fiscal disparities, both in terms of the level of services and of taxation, should tend to even out. This equalization will occur because each regional government will provide a standard level of required services within its boundaries and will draw upon the tax base of the region as a whole for its financing.

The regional government policy will complement and support Ontario's other reform programs. Creation of regional governments and reduction in the number of municipalities, for example, will facilitate the development of a rationalized system of provincial aid to local government. Reform of local taxation and the regional government program will be mutually reinforcing; province-wide reassessment will ensure that regional governments are developed from a sound fiscal footing, while the improved assessment balance achieved through regionalization will allow a more equitable distribution of tax burdens among classes of property. In addition, the Province intends to work towards common boundaries for school boards and regional governments.

Regional government will also assume growing significance for the achievement of Ontario's regional economic development policies. The Department of Treasury and Economics and the Department of Municipal Affairs are working closely together to ensure that the two programs are coordinated, complementary, and mutually supporting. The broad provincial plans for orderly growth and development in all regions of the province will provide an umbrella for the land use and environmental planning responsibilities of regional governments. Regional government boundaries will be used as basic "building blocks" in drawing up more uniform administrative boundaries for provincial departments, which is one of the objectives of Ontario's "Design for Development". Both the regional government and regional development programs are based, essentially, on the concept of urban growth points. The concentration of provincial expenditures at these growth points as a means of encourag-



ing economic growth and development in each region will result in an expansion of the local tax base of these growth centres. Regional governments will perform the key role of distributing these fiscal dividends throughout the region as a whole, thereby benefiting the rural areas as well as the urban centres. In addition, inter-regional equalization will occur through the discretionary regional allocation of the Province's budgetary expenditures and the program activities of provincial departments and agencies, under the regional development program.

This Government intends to implement the regional government program on a staged basis, giving priority to those areas of the province where the need for regional government is most immediate. The first full-fledged regional government came into existence in Ottawa-Carleton on January 1, 1969. The second regional government will be established in Lincoln-Welland, effective January 1, 1970. Other areas where attention is being concentrated are: Halton-Peel; East and North of Metro Toronto; Kitchener-Waterloo; Hamilton; Sudbury; and Muskoka. The timing schedule for Ontario's regional development program calls for definition of the growth points in all ten economic regions by the end of 1969 and the formulation of economic development plans throughout 1969 and 1970.

## SUMMARY AND CONCLUSION

The four reform programs set out in this paper constitute a complete restructuring of provincial and municipal finance in Ontario. The various reform policies are interdependent and complementary; they must be regarded as parts of a total plan, a total "Fiscal Framework for the Future". The changes involved in moving towards Ontario's long-term objectives will be far-reaching and pervasive. The Province intends to implement its reforms, therefore, in measured and coordinated steps, all the while retaining maximum flexibility to consider alternative methods and means.

The Province is convinced that major benefits and improvements will result from its package of fiscal and structural reforms. Provincial and municipal taxation will become more equitable, more efficient and more capable of producing the revenues Ontario will need for development and expansion of essential public services in the years ahead. A major burden of financing will be lifted from the slow-growing and oppressive property tax. The strengthening and modernization of local governments will enable them to meet their present problems and to cope more effectively with the emerging needs of Ontario's urban society. Finally, existing disparities in levels of public services and taxation across the province should gradually be levelled out.

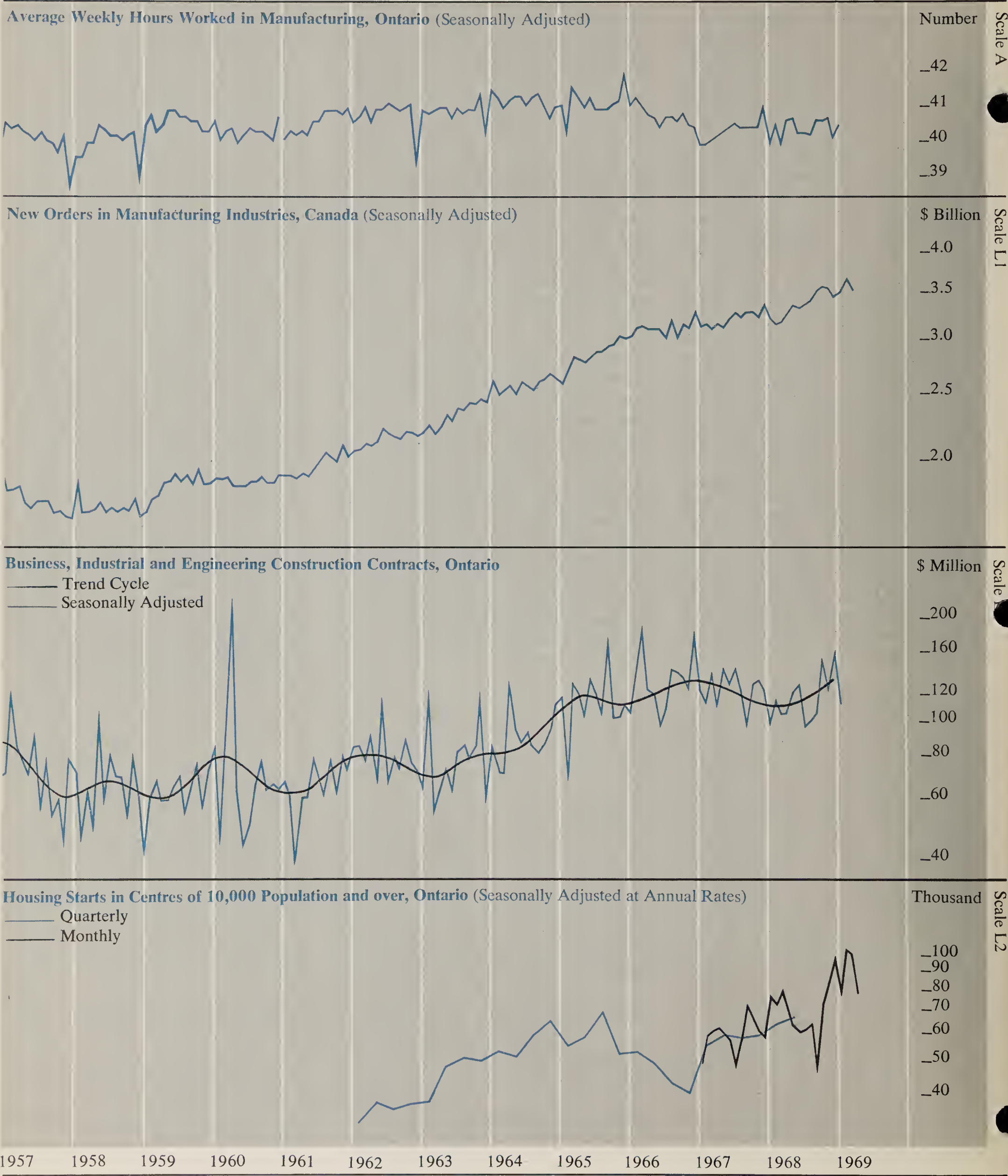
This article represents the framework of Ontario's reform program. A large number of less prominent recommendations in the reports of the Smith and Select Committees have yet to be fully considered before all the details of the reform program can be completed. These recommendations will continue to be reviewed by the Taxation and Fiscal Policy Branch of the Department of Treasury and Economics for possible implementation.

It must be recognized that this reform program will not be costless or painless. As the 1969 budget has pointed out, the first step in the program of fiscal reform must be to contain the growth in public expenditures. But even with continuing restraint, total taxation in Ontario must inevitably increase in the years ahead, unless the fiscal mismatch between the federal and the provincial-municipal sectors is corrected. Redistribution of tax burdens also means additional taxes on some individuals, some properties and some businesses. The Province is convinced, however, that the social and economic costs of maintaining our present system, with all its inequities and defects, would be higher still. Ontario must proceed with fundamental reforms, both because of the intrinsic merits of such reforms themselves, and to provide the basis for constructive and rational development of public finance in this province.



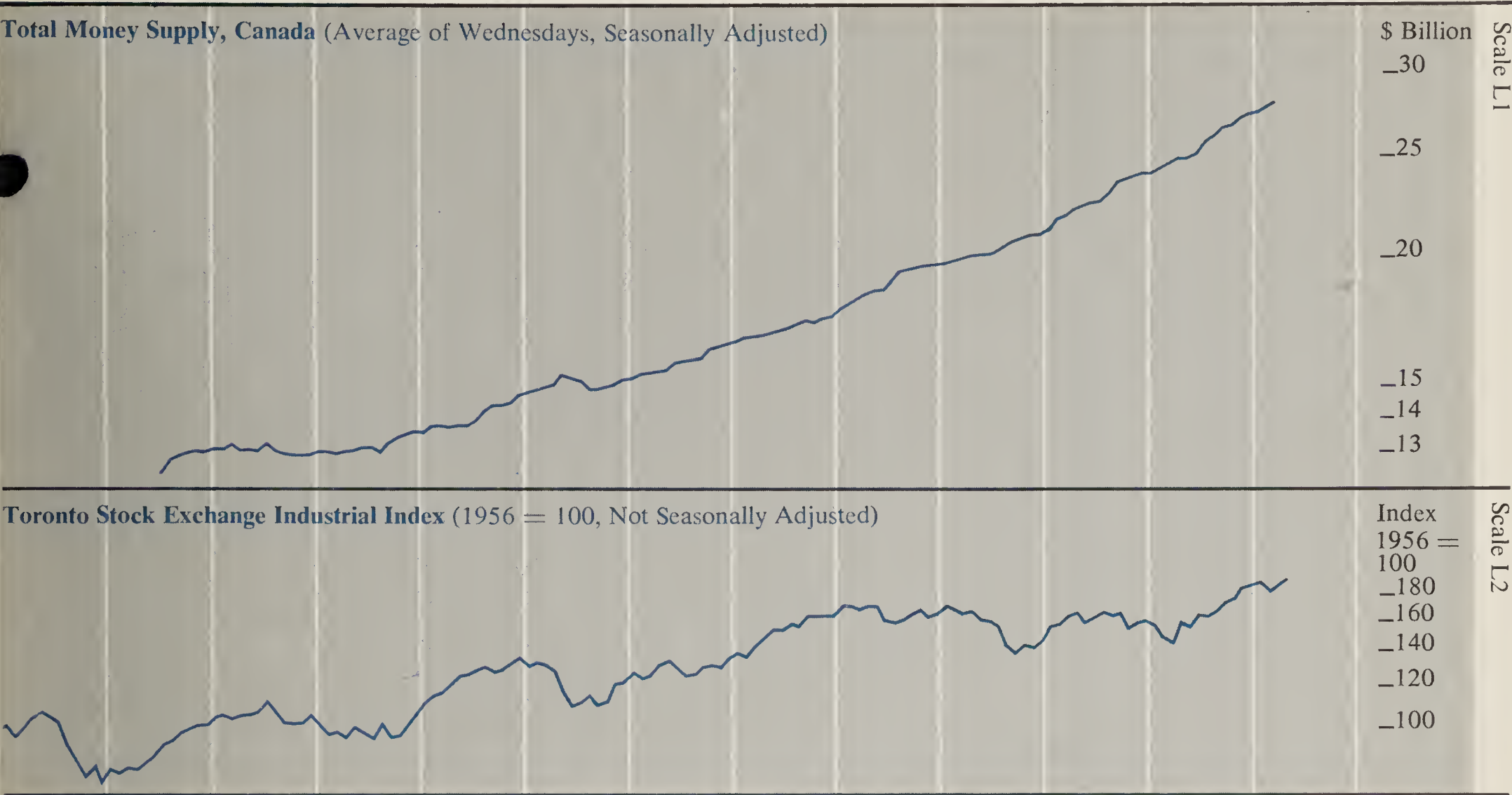
# Selected Economic Indicators

## Leading Indicators

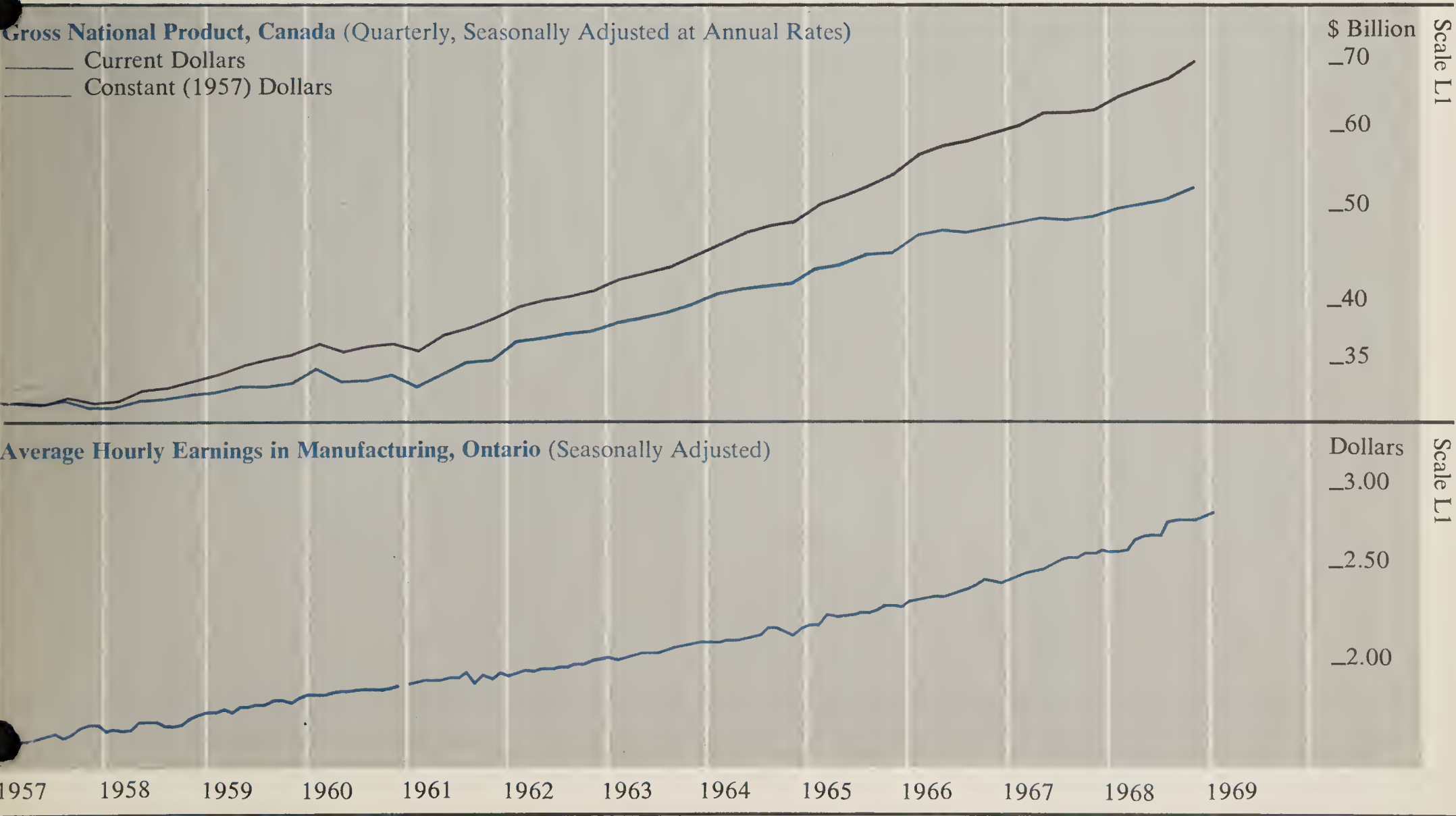




# Leading Indicators

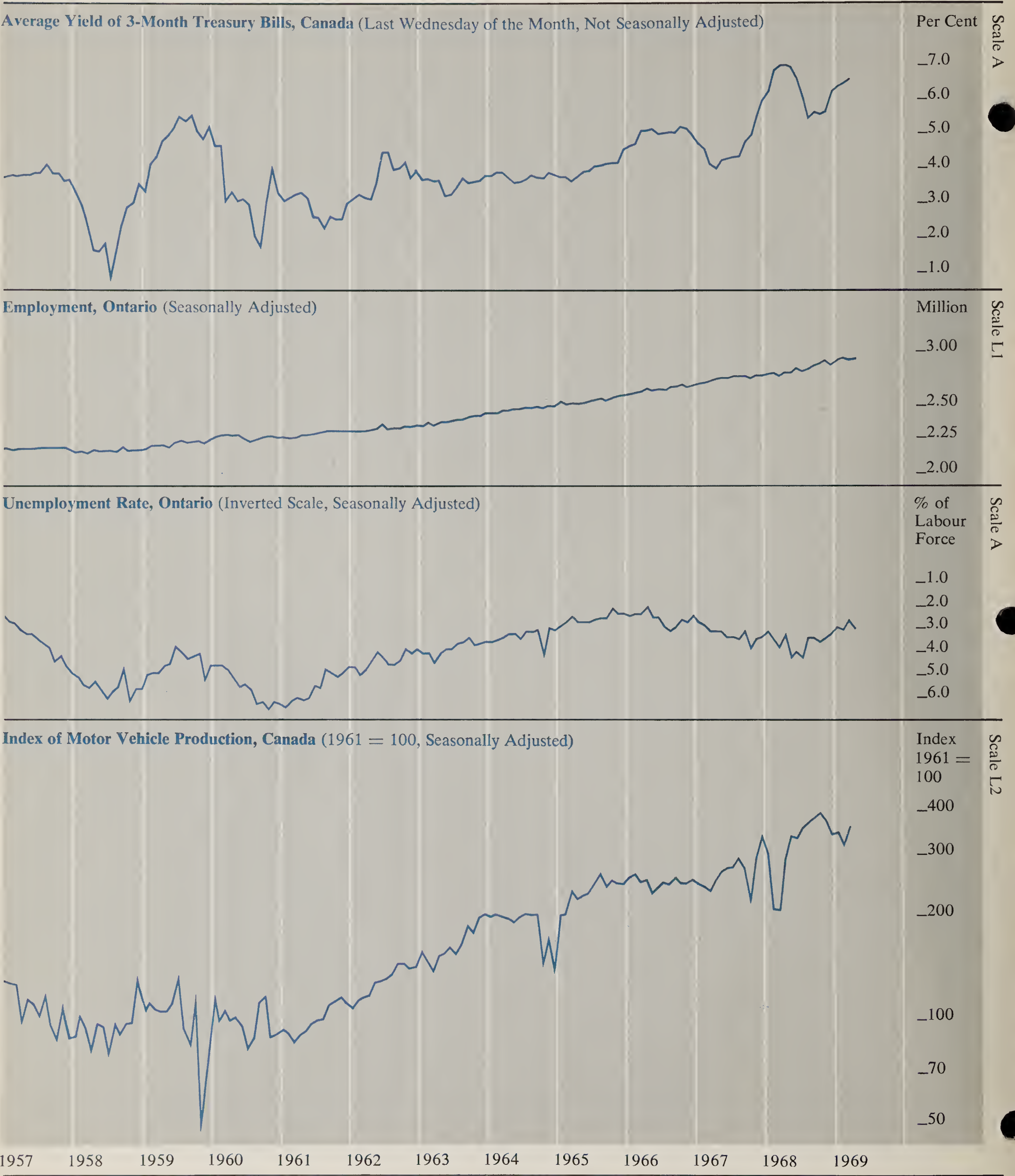


# Coincidental and Lagging Indicators





# Coincidental and Lagging Indicators





# Economic Indicators

13

Seasonally Adjusted

		1968										1969			
		Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April
<b>Leading Indicators</b>															
Average Weekly Hours Worked in Manufacturing	Number	39.6	40.6	40.7	40.3	40.3	40.2	40.6	40.6	40.7	40.1	40.5			
New Orders in Manufacturing Industries <sup>c</sup>	\$ Million	3,191	3,276	3,360	3,349	3,377	3,420	3,601	3,581	3,577	3,430	3,518	3,693	3,542	
Business, Industrial and Engineering Construction Contracts	\$ Million	104.6	107.1	123.4	129.3	97.7	101.8	107.8	154.4	125.0	155.0	111.9			
Urban Housing Starts (Annual Rate)	Number	79,400	69,200	63,200	60,800	61,900	63,900	48,900	73,400	83,500	98,200	80,800	109,700	102,400	79,900
Money Supply <sup>c</sup>	\$ Million	24,682	24,972	24,987	25,400	25,846	26,314	26,702	26,827	27,226	27,464	27,580	27,954	28,209	
T.S.E. Industrial Index <sup>u</sup>	1956 = 100	146.88	160.43	157.87	166.61	165.93	169.02	176.37	179.61	187.29	188.93	192.47	185.20	190.58	195.31
Business Failures <sup>u</sup>	Number	87	52	50	46	49	28	36	46	48	34	57	59	55	58
Business Failures — Liabilities <sup>u</sup>	\$ Million	5.6	6.4	2.8	6.6	2.9	1.3	1.5	2.1	2.5	1.2	2.9	3.2	2.2	3.2
<b>Coincidental and Lagging Indicators</b>															
Gross National Product <sup>c</sup> (Annual Rate)	\$ Million	65,168			66,328			67,824			70,152				
Average Hourly Earnings in Manufacturing	Dollars	2.60	2.67	2.68	2.67	2.71	2.76	2.78	2.78	2.79	2.81	2.84			
3-Month Treasury Bill Rate <sup>c,u</sup>	Per Cent	6.98	6.99	6.95	6.56	6.03	5.48	5.66	5.57	5.66	6.24	6.38	6.43	6.58	
Cheques Cashied in Clearing Centres <sup>1</sup>	\$ Million	5,313	5,031	5,448	5,199	5,381	6,034	5,065	5,821	5,907	5,885	5,698	5,458		
Retail Trade	\$ Million	780	785	779	804	840	835	850	851	862	853	879	886	862	
Labour Force	000's	2,869	2,890	2,918	2,962	2,948	2,937	2,959	3,002	3,026	2,977	3,010	3,037	3,019	3,038
Employed	000's	2,760	2,796	2,796	2,844	2,825	2,837	2,858	2,890	2,923	2,879	2,928	2,947	2,940	2,948
Unemployed	000's	109	94	122	118	123	100	101	112	103	98	82	90	79	90
Unemployed as % of Labour Force	Per Cent	3.8	3.3	4.2	4.0	4.2	3.4	3.4	3.7	3.4	3.3	2.7	3.0	2.6	3.0
Wages and Salaries	\$ Million	1,107	1,130	1,141	1,141	1,142	1,157	1,186	1,198	1,223	1,224	1,236			
Index of Industrial Employment	1961 = 100	125.5	126.0	125.8	124.0	124.1	125.4	126.7	127.8	128.6	129.3	130.5	130.8	131.1	
Index of Industrial Production <sup>c</sup>	1961 = 100	154.9	156.8	158.4	160.1	159.5	159.3	161.6	163.7	165.7	166.0	165.3	167.1	169.7	
Total Manufacturing <sup>c</sup>		154.0	156.4	158.1	159.7	157.8	158.0	161.3	163.7	165.9	165.7	163.5	166.3	169.8	
Non-Durables <sup>c</sup>		145.7	143.5	142.8	146.1	142.1	139.8	142.8	144.6	148.0	149.8	147.6	150.7	152.6	
Durables <sup>c</sup>		164.2	172.2	176.8	176.2	177.0	180.2	183.9	187.0	187.8	185.0	183.0	185.5	190.7	
Mining <sup>c</sup>		152.4	153.3	153.1	154.6	156.1	154.3	152.9	154.0	155.1	154.4	160.2	160.0	159.5	
Electric Power and Gas Utilities <sup>c</sup>		166.6	165.7	169.1	172.1	179.9	179.0	177.5	178.5	179.7	186.7	189.5	184.3	184.7	
Primary Energy Demand (Annual Rate)	BKWH	54.01	53.94	53.81	53.83	55.92	55.69	54.83	57.09	57.89	59.81	59.83	58.45		
Exports (including re-exports) <sup>c</sup>	\$ Million	1,125.7	1,165.3	1,097.2	1,115.9	1,063.5	1,103.5	1,115.0	1,176.4	1,203.2	1,201.8	1,214.9	1,299.8	1,276.1	1,170.0
Imports <sup>c</sup>	\$ Million	970.9	1,026.6	992.2	962.7	927.3	963.0	1,092.1	1,127.2	1,084.3	1,106.0	1,105.6	1,163.3	1,226.2	1,172.8
<b>Unclassified Indicators</b>															
Foreign Exchange Reserves <sup>c,u</sup>	U.S. \$ Million	2,244	2,416	2,695	2,574	2,515	2,590	2,534	2,525	2,672	2,827	2,864	2,820	2,779	
Industrial Materials Price Index <sup>c,u</sup>	1935-39 = 100	253.0	251.2	252.0	253.0	253.4	254.2	253.4	256.8	257.1	258.9	261.4	263.5	264.1	269.6
Consumer Price Index <sup>c,u</sup>	1961 = 100	118.6	119.3	119.3	119.7	120.4	120.7	121.1	121.4	121.9	122.3	122.6	122.6	123.2	124.6

<sup>c</sup>Statistics for Canada.

<sup>u</sup>Not seasonally adjusted.

<sup>1</sup>Ontario less Toronto.



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# Ontario Economic Review

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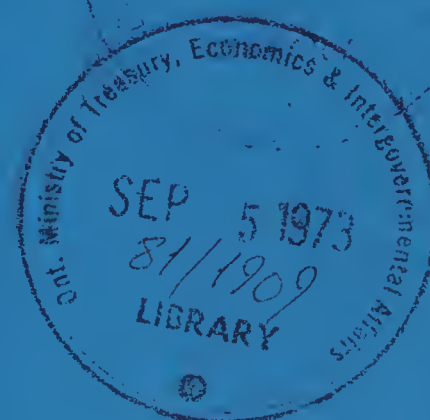
July/Aug 1969  
Volume 7, Number 4

Department of Treasury and Economics

Hon. Charles S. MacNaughton, Treasurer of Ontario  
and Minister of Economics

H. Ian Macdonald, Deputy Minister

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# Ontario Economic Review

July/Aug 1969

Volume 7, Number 4

## The Ontario Economy

## St. Lawrence Seaway—Impact on Ontario

K. W. Foley, *Economist*

Department of Treasury and Economics

## Selected Economic Indicators

A publication of the  
Department of Treasury  
and Economics  
Government of Ontario

Hon. Charles S. MacNaughton  
*Treasurer of Ontario and  
Minister of Economics*  
H. Ian Macdonald  
*Deputy Minister*

The *Ontario Economic Review* is prepared and edited bimonthly in the Economic Analysis Branch of the Economic and Statistical Services Division, Department of Treasury and Economics. The review presents articles of interest as well as current information on economic activity in Ontario. Signed articles reflect the opinions of their authors and do not necessarily represent the views of the Department.

Subscriptions can be obtained free of charge by writing the Editor, *Ontario Economic Review*, Department of Treasury and Economics, Frost Building, Queen's Park, Toronto 5, Ontario.

### About the Review

In conjunction with the tenth anniversary of the St. Lawrence Seaway system the feature article for the July/August edition of the *Ontario Economic Review* presents an assessment of the importance of the Seaway to the Province of Ontario.

Construction of the integrated Seaway was started in August 1954 and officially opened in June 1959 providing a 2,300-mile river, lake, lock and canal complex — one of the world's longest navigable inland waterways. Since then, much controversy has been raised concerning the actual importance of the Seaway as a transportation route for the abundant natural resources and agricultural produce of the surrounding areas as well as its suitability for navigation by ocean-going vessels.

The survey, carried out from the point of view of the Province of Ontario provides an analysis of the magnitude of the benefits to each port located within the province in terms of the origin or destination of commodities shipped or received from each port, the effect of the Seaway on the pattern of cargo movements and estimated changes in the level of investment in each port since the opening of the St. Lawrence Seaway.

This article, an extract from the longer study, was prepared by Mr. K. W. Foley, Economist, with the Economic Planning Branch, Policy Planning Division of the Department of Treasury and Economics. The author acknowledges with appreciation the assistance of Miss Carol Nickel, also of the Economic Planning Branch, in the preparation of this study.

### Indicator Charts, Pages 13-15

Fluctuations in aggregate economic activity — commonly used to define business cycles — do not necessarily correspond with fluctuations in the individual activities which make up the aggregate. Instead different indicators of economic activity may vary with respect to both their rates of growth and the timing of their peaks and troughs: some may grow more rapidly than others, some change direction sooner.

Those activities which tend to assume a direction in advance of the aggregate — because they relate to future rather than present production — are referred to as leading indicators, and are widely used to anticipate the short-run future course of the overall economy. The charts on pages 13-15 in the *Ontario Economic Review* present a number of these leading indicators, as well as several which are coincidental to or lag behind the aggregate, to provide for the reader an opportunity to make such an evaluation.

While comparisons of the timing and direction of general changes in the various indicators can readily be made, great care must be exercised in making such a comparison of the amplitude of fluctuations. Of the three vertical scales used — 'A' (arithmetic) and 'L1' and 'L2' (logarithmic scales with one and two cycles respectively over a given vertical distance) — only the logarithmic scales can be used to compare relative changes in different indicators. *And this applies only when all series being compared are on the same logarithmic scale.* In such a situation all parallel lines represent equal rates of growth, the exact rate of growth being determined by the slope of the line.



Recent data released by the Dominion Bureau of Statistics indicate the possibility of a slowdown in the vigorous advance of the Canadian economy. The evidence is far from conclusive and rests as yet on the results of one or two months. However, although inflationary price and wage increases continue to threaten, a trend toward a moderating growth rate in the second half of 1969 seems quite probable. While further confirmation is required, the economy does seem to be coming under the influence of the Bank of Canada and federal government policies of restraint. Such an alteration would bring Canadian performance more in line with the reduced rate of expansion in the United States.

Evidence for this development can be found in preliminary estimates of exports for the first half of 1969. While totalling \$7.3 billion, up 12.0 per cent from the comparable 1968 period, the year-to-year gain for exports has dropped from 15.2 per cent in the first quarter to 9.6 per cent in the second quarter. In the first half, the whole of the increase in shipments continued to occur in sales to the United States with about one half of the gain reflecting higher shipments of motor vehicles and parts. However, much of the expected gain in auto exports for 1969 has taken place and the U.S. dock strike earlier this year, which encouraged imports from Canada, has been settled. Moreover, the U.S. housing industry has weakened after stimulating a sharp rise in both the volume and price of lumber purchases from Canada earlier in the year.

With U.S. real growth slackening and the export market for Canada's wheat weakening there is little reason to look for a significant upsurge in Canadian exports in the second half of 1969.

In other areas, the sharp drop of 2.0 per cent in the seasonally adjusted April index of industrial production is considered to be a further indication of moderating growth especially when followed by the marginal decline in May. Manufacturing shipments in April were down 3.1 per cent following a marginal drop in March, however, this situation was influenced to some degree by labour unrest and material shortages.

Additional support for a weakening trend is evident in recent unemployment figures. At the national level, unemployment which averaged 4.8 per cent of the labour force in 1968 fell to 4.3 per cent in the first quarter of this year. Since then, it has increased to 4.4 per cent in April and 4.9 per cent in May.

This rapid increase in unemployment is partially the result of a faster-than-usual expansion of the labour force, even at this time of year.

In Ontario unemployment averaged 3.6 per cent of the labour force during 1968 and dropped to an average of 2.7 per cent in the first quarter of this year. Since then it has followed the national lead rising to 3.0 per cent in April and 3.7 per cent in May. As at the national level this increase is partially attributable to a larger-than-average influx into the labour force.

## Construction

Ontario's construction activity in May expressed in terms of contracts awarded (not seasonally adjusted), as recorded by *Southam Building Guide*, increased by 18.0 per cent over the corresponding month in 1968. In May the total value of contract awards was \$301.0 million compared with \$255.2 million in the same month last year. The May 1969 total while remaining high shows a slight decrease from the total for April possibly reflecting the anticipated easing of corporate profits after the strong first quarter, together with tight money and a slowing in the growth of final demand. As a result some postponement of capital investment may be taking place as is happening in the United States.

Reflecting the strength of the first quarter the total value of construction awards in Ontario for the first five months is 29.0 per cent above the corresponding value for 1968. In the other major economic regions of Canada, British Columbia, the Maritimes and Quebec recorded gains of 29.0 per cent, 17.0 per cent and 9.0 per cent respectively, while contract awards decreased by five per cent in the first five months in the Prairie Provinces.

At the national level data for the month of May indicate a continuation of the overall upward trend that was established early in the year. Percentage changes for the various categories, when comparing May 1968 and May 1969 data are: residential, up 11.0 per cent; commercial/institutional, up 8.0 per cent; industrial, down 8.0 per cent with total building construction up 7.0 per cent and engineering contract awards up 8.0 per cent. Comparison of cumulative five-month totals for 1968 and 1969 shows residential, up 16.0 per cent; commercial/institutional, up 28.0 per cent; industrial, up 1.0 per cent; total building construction up 20.0 per cent and engineering awards up 18.0 per cent.

Large construction awards in Ontario for the month of May, each valued at \$1.0 million or more, totalled \$72.2 million. Some are listed below.

## Large Construction Awards Placed Recently in Ontario

Location	\$ Million	Description
Chelmsford	2.5	Apartments
Goulbourne Twp.	1.0	Swimming Pool
Guelph	1.0	Water Reservoir
Hamilton	1.9	Incinerator Alterations
Hanmer Twp.	3.3	School
Kingston	12.0	College Additions
Kitchener	1.7	Hotel
London	26.6	College Expansion
London	1.7	Schools
March Twp.	5.3	Schools
Metro Toronto	12.5	School and College Extensions
Millhaven	3.1	Heating Plant
Nepean Twp.	1.4	Housing
Ottawa	3.0	Office Buildings
Stoney Creek	1.1	Apartments
Vanier	15.0	Apartments
Various locations	20.0	Provincial Highway Projects
Windsor	4.2	Apartments

Source: Southam Building Guide.



In terms of actual housing construction, the number of dwelling unit starts in Ontario centres of 10,000 population and over was 6,399 in May, 25.0 per cent less than in the corresponding month of the previous year but 18.0 per cent above the April 1969 level of 5,443. The cumulative total for the first five months of 1969 was 25,429, 13.0 per cent higher than the same period last year. May starts in Toronto at 3,162 were down 27.0 per cent from May 1968 but up 41.0 per cent in comparison to the preceding month. This brought the cumulative five-month total for Toronto to 12,199, a decrease of 0.3 per cent from the corresponding level in 1968. In addition, the proportion of Ontario's urban starts accounted for by Toronto declined from 54.0 per cent in the first five months of 1968 to 48.0 per cent in the corresponding period of the current year. Across the province, in percentage terms, major centres with large increases in May included Cornwall, Sudbury, Oshawa, Kingston, Windsor and Fort William/Port Arthur. The largest percentage decreases occurred in Peterborough, Lindsay and Georgetown.

For the year to date house-building has been one of the most buoyant sectors of the economy, however, year-to-year advances have tended to be moderate. In the past two months conditions in the residential mortgage market have deteriorated with the further rise in interest rate costs and a contraction in the supply of available funds. As a result there is some speculation that starts in the second half of 1969 may be down from the first half and less than those in the second half of 1968.

Dwelling unit completions in Ontario centres of 10,000 population and over numbered 6,838 in May, up by 15.2 per cent from 5,937 in April. When compared to May 1968 this represents an increase of almost 200 per cent. Toronto with 5,482 units accounted for 83.0 per cent of the total with the greatest concentrations in North York, Toronto City, Mississauga and Scarborough. At May 31st, there were 54,492 dwelling units under construction in Ontario, 16.2 per cent more than the 46,914 units under construction one year earlier.

### Gross National Product

The rapid pace of economic activity con-

tinued in the first quarter of 1969 as the Gross National Product increased by 2.5 per cent to reach a level of \$71.9 billion, seasonally adjusted at annual rates. According to recently published DBS figures the advance in terms of constant 1957 dollars was approximately 1.5 per cent, allowing for a price increase of one per cent, slightly higher than in the fourth quarter of 1968. This buoyant performance in the first quarter was generally anticipated and reflects the brisk pace set by the economy in the second half of 1968.

Intensified demand pressures in most sectors, partially met from substantially higher imports, characterized the first quarter. In comparison to the fourth quarter of 1968 larger advances occurred in personal expenditure, business gross fixed capital formation and exports, together with increased investment in business non-farm inventories. In contrast, government purchases of goods and services rose only slightly while accumulation of farm inventories declined sharply, partially as a result of much higher wheat exports.

Personal expenditure on consumer goods and services rose substantially to a level of \$43.5 billion, seasonally adjusted at annual rates. This represents an increase of three per cent from the fourth quarter of 1968. All major categories with the exception of automobiles and tobacco recorded gains as the advance in consumer outlays outpaced a one-per-cent increase in disposable income resulting in a sharp decline in personal saving. Gross fixed capital formation increased by 3.5 per cent largely as a result of an expansion in new residential construction as housing starts in the first quarter of 1969 rose 37.5 per cent over starts in the corresponding quarter of 1968. Outlays for plant and equipment advanced at the same moderate rate as in the fourth quarter of 1968 with a five-per cent gain in the machinery and equipment component outweighing a drop of three per cent in non-residential construction.

Government purchases of goods and services advanced by one per cent, the smallest increase in six quarters as the government sector as a whole exercised a restraining influence on the economy. With total revenue of all governments combined (including the

Canada and Quebec Pension Plans) rising more sharply than expenditures, the government surplus, seasonally adjusted at annual rates and on a National Accounts basis, increased from \$1,376 million in the fourth quarter of 1968 to \$2,188 million in the first quarter of this year, the largest in recent years. At the federal level, revenues rose by about 3.5 per cent while expenditures increased by almost two per cent. As a result the federal surplus moved from a rate of \$248 million in the fourth quarter to a rate of \$452 million in the first quarter. Provincial-municipal revenues rose by 4.5 per cent and expenditures were virtually unchanged so that the provincial-municipal surplus increased from a rate of \$84 million to a rate of \$692 million.

Reflecting the strength of demand by both Canadians and non-residents, exports and imports registered their largest increases since the first quarter of 1968. Merchandise exports advanced 5.5 per cent, led by large gains in wheat, wood pulp, newsprint, and a number of metals. Merchandise imports rose more rapidly at a rate of 7.5 per cent, with sizable advances in non-farm machinery in line with the larger domestic investment program.

More recent data on Canadian Trade indicate that imports continue to grow more rapidly than exports. Preliminary figures for June record imports at \$1,266.5 million, 28.7 per cent higher than the corresponding figure in June 1968. In the first six months imports totalled \$7,081.3 million, up 17.8 per cent over the first six months of 1968. Exports too have increased, however, with the exception of February the monthly year-to-year growth rate of imports has exceeded that of exports. June exports at \$1,287.7 million were 14.8 per cent higher than for June 1968. For the six-month period exports totalled \$7,283.0 million, or 11.8 per cent above the six-month total for 1968. The resulting cumulative trade balance of \$201.7 million is less than one half of that recorded in the first six months of 1968.

Among components of income in the first quarter, labour income advanced by three per cent with both goods-producing and service-producing sectors having the same rate of increase.



# St. Lawrence Seaway—Impact on Ontario

3

K. W. Foley, *Economist*

Department of Treasury and Economics

## INTRODUCTION

The St. Lawrence Seaway has often been praised, applauded, and at the same time, feared as a force capable of changing the economic fabric of central and eastern North America. Much has been said about the importance of the Seaway as a transportation route and indeed, these facilities have provided benefits to the areas lying adjacent to it. The question, of course, arises as to the magnitude of these benefits and the location of the major beneficiaries. Ontario, despite its location, has not participated substantially in the benefits arising from this waterway and it is evident after 10 years of operation that the potential benefits to Ontario are still greater than the accomplished facts.

The Great Lakes and the St. Lawrence River form the southern boundary of the Province of Ontario and the northern boundary of the States of New York, Ohio, Michigan and Wisconsin and as such it is to be expected that this natural and artificial waterway will capture large trade flows. The St. Lawrence Seaway does handle large cargo movements and is a very important asset for specific trade movements such as iron ore, coal, petroleum and grain products. In 1968 the Seaway canals moved, upbound and downbound, 66 million tons of cargo.

In order to assess Ontario's position we have recently undertaken a survey of all Ontario Great Lakes ports in an attempt to locate these beneficiaries and determine the size of the benefits. This survey was carried out solely from the point of view of Ontario and assesses direct benefits only. Each port within the Province of Ontario, located on either the St. Lawrence River or the Great Lakes, was examined to determine:

- the commodities shipped and received from each port
- the origin or destination of the commodities handled, thereby examining the Great Lakes trade routes and their effect on Ontario ports
- the change in cargo movements since the opening of the St. Lawrence Seaway in 1959
- the approximate changes in the level of investment in each port and how these changes relate to the St. Lawrence system.

From this material some assessment could be made of the importance of the St. Lawrence Seaway system to Ontario. The data used in this report was largely provided by the Dominion Bureau of Statistics from their

annual *Shipping Report*. The year 1967 was used for the international movements and the year 1966 was used for the coastwise movements. (This was necessary due to the non-availability of 1967 coastwise traffic data, and while this presents some problems and probable inaccuracies, the changes from year to year should produce only marginal errors. It is our opinion that this factor does not greatly affect the conclusions.)

The St. Lawrence Seaway system as defined in this survey includes all of the canals on the St. Lawrence River and the Welland Ship Canal; it does not include the locks at Sault Ste. Marie. This definition was used for the following reasons:

- 1) there are no tolls applied to the locks at Sault Ste. Marie;
- 2) with the opening of the Sault Ste. Marie "Poe locks", which are owned and operated by the U.S. government and are independent of other Seaway facilities, there exists a distinct difference in operation, character, ownership and economic significance of these facilities from other Great Lakes and St. Lawrence facilities.

The above definition of the St. Lawrence Seaway system classifies any traffic both originating and terminating at ports above the Welland Canal as "intra-lake traffic" and therefore not utilizing the St. Lawrence Seaway facilities.

The St. Lawrence Seaway system traffic and water-borne transportation in general is characterized by a large unit load and substantial economies of scale. The inland trade routes are particularly specialized as the vessels in major trades are both adapted to the commodity handled and the route travelled. The dimension of the Seaway facilities and the loading characteristics of the major trades have created a class of vessel that is particularly suitable to the Great Lakes traffic.

The characteristics that appear to make a commodity trade attractive to inland water-borne movement are:

- *Length of haul:* In the following table we can see the comparison between the length of hauls for the major cargoes on both domestic and international traffic. Almost all of the major commodities have a length of haul over 500 miles, coal and fuel oil being the main exception.

Water transportation has an extremely low ton-mile cost for the line haul portion of a voyage in comparison with that of overland modes. The large unit loads spread over relatively low operating costs per mile serve to bring about this result. This means that terminal costs become an important factor in efficient ship operation. The greater the percentage of time that a ship spends in port, the higher the ton-mile costs.

**Length of Haul for Major Commodities Transported on the Great Lakes, 1965**

Product	Canadian Coastwise Trade		International Seaborne	
	Avg. Length of Haul <sup>1</sup> miles	Weighted Avg. Length of Haul <sup>2</sup> miles	Avg. Length of Haul <sup>1</sup> miles	Weighted Avg. Length of Haul <sup>2</sup> miles
Grain Products (Wheat)	752.25	1,092.63	1,210.83	1,203.18
Other Grain Products	792.68	1,039.93	958.57	1,286.53
Wood Products	462.14	330.89	856.82	703.51
Iron Ore	561.21	559.65	798.34	931.89
Coal	598.80	1,079.57	265.19	213.15
Gypsum	1,032.50	918.18	—	—
Newsprint	605.40	604.26	1,058.79	1,006.76
Fuel Oil	290.44	294.00	—	—

<sup>1</sup> distance between origin and destination (average).

<sup>2</sup> average length of haul weighted by tons carried.

Notes: These figures represent only those cargoes where Canadian ship operators can compete for the traffic. They do not include American domestic movements.



A vessel will incur basically the same costs while in port as when underway; some increases in fuel costs will occur when underway but these are probably offset by terminal charges and terminal services when in port. The vessel does not earn revenue while in port and, therefore, these costs become overhead costs which must share the revenue earned while underway. The longer a vessel spends in port the higher will be the ton-mile cost and the more competitive the overland modes of transport will be. The long length of haul reduces the port time as a percentage of the total time in operation and increases the utilization of the revenue-earning capacity of the vessel.

- *Homogeneous products:* In almost all cases major cargoes are made up of a homogeneous product, that is, one particular unit of the product is not much different than any other. This eliminates any sorting or classifying of these products. This is not the case with general cargo, as a particular shipment must go to a particular consignee, and must be identifiable from all other shipments. The fact that the major commodities are homogeneous products reduces the *terminal* handling costs and allows the use of automatic unloading services. This fact is particularly important as pointed out above.
- *High density of movement:* The major cargoes and the major trade routes are considered high-density traffic, with large volumes moving between relatively few points. This is the case in all but a few of the major cargoes. The exceptions to this would be the wood products and petroleum products as these latter commodities involve a distribution or feeder type of operation. These high-density movements allow larger ships to operate efficiently as the larger the ship's capacity the greater the number of revenue tons on which to spread the fixed terminal and overhead costs. This results in lower ton-mile costs and a further competitive advantage over land-based modes. However, unless there is sufficient density of traffic these large ships could not obtain a high load factor. (The percentage of total ship capacity that the current load occupies.) Because of the high fixed costs and the relatively low out-of-pocket operating cost each additional unit of capacity utilized contributes heavily to overhead and pro-

fits. Thus high density of traffic is necessary to maintain the low ton-mile costs that keep the shipping lanes competitive.

Having examined some of the characteristics of Great Lakes ports' cargo it is interesting to note that most of the cargo is loaded and unloaded from a very few ports. There are basically three major ports within the province and perhaps three subsidiary ports. This fact is illustrated in the following table:

Water-Borne Traffic Handled in Ontario

Port	Coastwise Trade		International Trade	
	Loaded	Unloaded	Loaded	Unloaded
	000's Tons		000's Tons	
Port Arthur	14,493.0	1,164.6	3,846.0	368.9
Hamilton	503.7	2,703.4	305.7	6,549.2
Toronto	276.6	1,935.4	255.9	3,395.4
Sarnia	2,374.3	498.8	207.3	1,083.1
Sault Ste. Marie	239.2	960.9	209.5	2,918.9
Windsor	558.1	549.0	586.7	1,259.6
Total of Major Ports	18,444.9	7,812.2	5,411.2	15,575.3
Total Ontario Ports	22,520.3	16,089.9	9,470.2	21,590.4

The six ports indicated above represent a major portion of the total water-borne traffic handled in Ontario. The following percentage applies to each trade route:

Cargo Volume of Top Six Ports as a Percentage of Total

	Coastwise Trade		International Trade	
	Loaded	Unloaded	Loaded	Unloaded
Top Six Ports	18,444,976	7,812,162	5,411,195	15,575,283
Total Ontario Ports	22,520,302	16,089,919	9,470,237	21,590,375
Top Six as Per Cent of Total	81.9	48.6	57.1	72.1

In each of the above trade routes, if one or more port is added to the "top six" ports then the percentage of total will increase dramatically. For example:

- *Coastwise loading:* If the limestone movement from the Port of Cobourg is added to the coastwise loadings then these ports represent 87 per cent of total loadings;

- *Coastwise unloading:* If the unloadings of 1,551,847 tons at Clarkson and the 1,129,028 tons at Port Credit are added to the unloadings of the above ports then these ports represent 65 per cent of total unloadings;
- *International loadings:* If the loadings of iron ore at Depot Harbour, Picton, Little Current and the dolomite loadings at Port Colborne are added to the above ports then these ports represent 91 per cent of total international loadings;

- *International unloadings:* If the coal unloadings at Port Credit are added to the international unloadings at the above six ports then these ports represent 85 per

cent of the total international unloadings.

In addition to handling the majority of the cargoes on the Great Lakes these same six ports handle much of the intra-lake traffic. The ports of Toronto, Hamilton and Port Arthur, because of their geographic position and the type of cargo handled, reap major benefits from the Seaway and the percentage



of intra-lake traffic from these ports is rather small. The same is not true of the ports of Sarnia, Sault Ste. Marie and Windsor, as the intra-lake percentage of traffic from these ports is extremely high.

The majority of the smaller ports in Ontario are in the same classification as these latter harbours. They handle large amounts of intra-lake traffic, usually for a very few specialized industries.

**Toronto** — intra-lake as a per cent of total domestic cargoes 22.4; intra-lake as a per cent of total international cargoes 3.8.

**Port Arthur/Fort William** — intra-lake as a per cent of total domestic cargoes 27; intra-lake as a per cent of total international cargoes 78.6.

**Sarnia** — intra-lake as a per cent of total domestic cargoes 76.7; intra-lake as a per cent of total international cargoes 90.8.

**Sault Ste. Marie** — intra-lake as a per cent of total domestic cargoes 88.4; intra-lake as a per cent of total international cargoes 99.4.

**Windsor** — intra-lake as a per cent of total domestic cargoes 52.0; intra-lake as a per cent of total international cargoes 96.8.

## CARGO MOVEMENTS ON THE GREAT LAKES

During the 1967 shipping season 137,045,597 tons of cargo were transported on the Great Lakes. Of this total:

- 76,721,288 tons or 56.0 per cent did not utilize any of the St. Lawrence Seaway Canals;
- 17,600,454 tons or 12.8 per cent utilized only the Welland Canal;
- 36,076,263 tons or 26.3 per cent utilized both the Welland and the St. Lawrence River Canals;
- 7,771,676 tons or 5.6 per cent utilized only the St. Lawrence River Canals.

Thus, the majority of the traffic on the Great Lakes did not utilize Seaway facilities, and only 26 per cent travelled through both the Welland and the St. Lawrence River Canals, thereby obtaining the maximum benefit from the Seaway expansion. Of the cargoes moving upbound through both the Welland Canal and the St. Lawrence River Canals 68.5 per cent of the total 19 million tons was made up

of iron ore and related steel-industry products. These shipments were moving from the Sept Iles ore docks to the U.S. Lake Erie steel mills. The balance of the upbound traffic was composed of minor quantities of fuel oil, newsprint, miscellaneous cargoes and approximately four million tons of general cargo moving through the canal system to U.S. cities of Chicago, Milwaukee, Detroit, etc.

Of a total 19 million tons of cargo transiting both sets of canals, 86.4 per cent was cargo destined to U.S. ports from other than Ontario ports.

The downbound flow of goods indicates somewhat the same pattern; however, in this case the predominant cargoes are grain and grain products. In 1967, 8.5 million tons of wheat and corn moved downbound through both the Welland and the St. Lawrence River canals. The origins of these cargoes were largely Port Arthur and Chicago, the former handling wheat and the latter handling corn. In addition, significant volumes of barley and soya beans were moved through both sets of canals. The volume of these commodities was approximately two million tons. Thus, of a total of 16.1 million tons of cargo moving downbound through both canal systems, 65.2 per cent was composed of grain products.

The major volume of these grain cargoes is handled in a very few ports. The grain shipments from Ontario originate almost totally in Port Arthur since this port functions as an interface between the grain growing regions on the prairies and the markets of the world. The benefits accruing to Ontario from the movement of these cargoes lies totally in the investment and employment created by these terminal operations.

### The Iron Ore Traffic

As outlined above a large percentage of the traffic moving on the St. Lawrence Seaway is related to the steel industry. The 1967 upbound movements through the St. Lawrence River canals consisted of approximately 16.3 million tons of iron ore. Approximately 2.8 million tons were destined for Hamilton steel mills and the balance to Lake Erie U.S. steel mills. The source of this iron ore is the Quebec/Labrador area iron mines.

The ownership of these mines is set out as follows:

- The Iron Ore Company of Canada (operator of seven mines — annual production 14 million tons) is owned by:
  - a) Hollinger Consolidated Gold Mines
  - b) Hanna Mining Co.
  - c) The M.A. Hanna Co.
  - d) National Steel Corp.
  - e) Republic Steel Corp.
  - f) Armco Steel Corp.
  - g) Youngstown Sheet and Tube Corp.
  - h) Wheeling Steel Corp.
  - i) Bethlehem Steel Corp.

This operation is almost totally owned and operated by U.S. steel producers and the majority of its output is delivered to mills in the northeastern states, particularly on Lake Erie.

- The Quebec Cartier Mining Company — annual output — 8,000,000 tons. This mine is a wholly owned subsidiary of the United States Steel Corporation.
- Wabush Mines Ltd. — annual output approximates 6,000,000 tons. This mining operation is owned and operated by:
  - a) Pickands Mather & Co.
  - b) Youngstown Sheet & Tube Co.
  - c) Inland Steel Co.
  - d) Interlake Steel Corp.
  - e) Pittsburgh Steel Corp.
  - f) Finsider
  - g) Steel Co. of Canada Ltd.
  - h) Dominion Foundries & Steel Ltd.

It is estimated that Canadian ownership and participation in this mining activity is approximately 38-40 per cent, the balance being owned by U.S. steel interests.

An analysis of both the traffic flows and the ownership of the mining operations suggests that there are substantial benefits from the St. Lawrence Seaway accruing to the U.S. steel industries and the carriers engaged in handling this commodity.

The 1967 volume of iron ore from the Quebec/Labrador iron deposits moving to Ontario steel centres represents approximately one-sixth of the total shipments from these deposits. The remaining five-sixths, unlike the volume moving to Hamilton, transits both canal systems and thus receives maximum benefits from this waterway.

In recent years both the Dominion Foundries and Steel Co. and the Steel Co. of Canada have constructed iron ore mining and pelletizing operations in Northern Ontario. In the case of Dofasco some portion of their supply of iron ore pellets does not



move via the Seaway at all as these shipments now arrive from the Sherman mine at Temagami via rail unit train. Stelco's operations at Bruce Lake may also avoid utilizing the St. Lawrence canal system since the Company is currently undertaking a plant construction program on the northern shore of Lake Erie. If this plant were completely supplied from the Bruce Lake area the need for Welland Canal transits would be eliminated.

While the steel companies have some ability to change supply locations this is somewhat limited.

Of particular significance is the fact that this iron ore trade is controlled by a relatively few producers and few purchasers, that is, the iron ore cargoes are largely captive products. The St. Lawrence Seaway Report carried out by J. Kates and Associates<sup>1</sup> states,

"By far the greater part of the North American iron ore producing industry is owned or controlled by the nine largest steel producers in the United States supplemented by two Canadian producers located in Hamilton. The balance is controlled by four iron ore houses, which although they produce ore for sale only, are closely tied to the steel makers. Iron ore is therefore largely a 'captive' product and ownership patterns and policies exert considerable influence on development and on the ability of various ores to retain traditional markets."

These steel producers control much of the world's iron ore output and therefore any changes in investment policies are likely to have a great deal of effect on the tonnage of ore moving via the various trade routes. In spite of this these mining ventures in the Quebec/Labrador and the Mesabi ranges represent "huge investments" by these steel companies and as such they are likely to be ensured of continual operation for some time. It is to be expected however that there will be fluctuations in the tonnage handled in each trade route as the steel companies shift their demands among their various holdings.

### The Grain Trade

Grain originating in the Canadian prairies is being shipped to export ports such as Montreal, Baie Comeau, Sorel and Trois Rivières. This grain travels the complete length of the Seaway, from the Lakehead area to the St. Lawrence and Atlantic sea-

ports and, therefore, in terms of ton-miles produced, is a very significant trade route.

Canadian grain is marketed by a marketing monopoly under the sponsorship of the Federal Government. This marketing body is known as the Canadian Wheat Board. Its function is to purchase the grain production of the Canadian Prairies and to market it in such a way that the farmers obtain an optimum price for their endeavours. The Wheat Board prices the grain at the export terminal at the delivered prices less the transportation costs. By this pricing mechanism the Wheat Board can control the flow of grain out of various ports, as a change of a few cents in the base price of one port over another will either attract or divert shipments from or to other ports.

The Wheat Board has had a large effect on decreasing the incentive for direct overseas shipments of grain from the Lakehead on ocean going ships, as the Board's prices at the Lakehead are higher on a *basis in store* level than at the lower St. Lawrence ports. This has given the Great Lakes ship operators a very economical operation in hauling grain to the lower St. Lawrence ports and returning with iron ore cargoes. The combination of the price differential and the availability of backhaul cargoes has prevented ocean-going ships from competing for this traffic on any scale. This policy also ensures an adequate and stable supply of ships to move the export grains to the Atlantic ports.

The Prairie grains flow to export ports through the price mechanism, that is the more efficient lower cost ports and transportation routes will attract the grain shipments from a greater hinterland. The handling capacity at the various ports has also been a determinant in allocating export shipments. The Pacific terminals are the most attractive from a cost point of view, however the volume of shipments from these points is limited by (1) the distance from producing areas, and (2) the terminal capacity of elevators, etc. The latter is not necessarily a long-term factor and can be altered with increases in the stock of these storage facilities. The Seaway is the second most attractive route for export grains and is well developed with elevator capacity.

It appears that the Seaway is and will continue to be a well established route for export grain. Several new elevators have been constructed on the lower St. Lawrence above Quebec City and these will attract additional grain exports.

### Domestic Grain Trade

A modest number of grain shipments are handled at Ontario ports and these cargoes are largely grain for domestic consumption or feed grains for feed lot production. The largest volume of this domestic grain is handled at Lake Huron, Georgian Bay and Lake Erie ports such as Midland, Collingwood, Port Colborne, Port McNicoll, Windsor and Goderich. This cargo does not utilize any of the St. Lawrence Seaway facilities and therefore can not be considered a beneficiary of such facilities.

### Coal Trade

The coal movements on the Great Lakes are almost totally destined to either steel mills or thermal electric generating stations. These major coal movements originate at the U.S. Lake Erie ports of Toledo, Conneaut and Ashtabula and are destined to Toronto, Port Credit, Sault Ste. Marie, Sarnia, Windsor and Hamilton. In 1966, 14.6 million tons of coal were shipped on the Great Lakes largely from Lake Erie ports and of this total 11.5 million tons or 78.8 per cent were received at the above ports.

The international coal movements on the lakes have a relatively short length of haul, however the water-borne movement is justified because of the extremely high density of movement to these particular ports and the automated unloading facilities that are installed on the vessels engaging in this trade.

A large percentage of these coal movements are intra-lake movements and as such do not receive benefit from the St. Lawrence Seaway (with the exception of the benefit of using larger vessels to haul this commodity). In many cases however these seaway-size vessels could operate captive to the upper lakes.

The two main Ontario beneficiaries of the St. Lawrence Seaway coal trade are the Hamilton steel companies and the Ontario Hydro Electric Commission. In 1966 these organizations received approximately 7.2 million tons of coal through the Welland Canal system. (Of this 7.2 million, the Lakeview and Hearn generating stations received 4.1 million tons.)

There are two significant implications of this coal movement:

- The water-borne movement of coal to thermal generating stations reduces cost of electric power to most consumers in the Metropolitan Toronto region. This

<sup>1</sup>St. Lawrence Seaway Tolls and Traffic; Analyses and Recommendations, J. Kates and Associates, Toronto, Ontario, December 1965.



# Weight in Tons of Inputs to the Iron and Steel Industry 1960-1966

	1960	1961	1962	1963	1964	1965	1966	TOTALS
	Tons							
Bituminous Coal								
Canadian	585,077	434,036	400,613	478,469	459,820	262,921	150,658	2,860,550
Imported	3,997,179	4,355,155	4,538,280	4,716,113	4,865,783	5,033,297	5,164,796	32,737,146
Total	4,582,256	4,789,191	4,938,893	5,194,582	5,325,603	5,296,218	5,315,454	35,597,696
Iron Ore								
Crude:								
Canadian (S) <sup>1</sup>	704,667	407,976	464,897	578,185	488,964	547,924	78,758	3,974,371
Imported (S) <sup>1</sup>	725,525	1,025,947	1,071,069	823,571	936,760	442,786	626,012	5,797,934
Canadian (B) <sup>2</sup>	1,487,833	946,398	915,080	710,024	548,954	778,489	436,573	7,970,080
Imported (B) <sup>2</sup>	2,102,651	2,075,089	1,815,257	1,776,952	1,290,956	1,375,407	1,070,856	16,513,637
Other:								
Canadian	1,014,910	1,354,098	1,482,514	2,073,137	2,571,241	3,157,365	4,245,354	17,852,625
Imported	774,785	1,786,286	2,419,695	3,050,640	3,637,373	3,714,208	2,986,219	18,809,971
Total	6,810,371	7,595,794	8,168,512	9,012,509	9,474,248	10,016,179	10,146,772	70,918,618
Limestone								
Canadian	502,831	421,394	388,303	427,784	413,237	448,234	328,504	3,477,195
Imported	292,685	348,741	331,694	333,748	331,107	309,536	251,308	2,507,916
Total	795,516	770,135	719,997	761,532	744,344	757,770	579,812	5,985,111

<sup>1</sup> (S) — ore destined for Sinter plants  
<sup>2</sup> (B) — ore destined for blast furnaces

Totals include data for years 1958 and 1959 not shown here.

reduction may not be realized by the local users only, as the power generated is fed into a national power grid and therefore this lower power cost is transferred throughout the system. It is evident that the thermal plants under construction at Nanticoke and Lambton are located to supply the large prospective local demands and to take advantage of lower transportation costs. Coal movements to these plants will avoid the use of the Seaway facilities (and the Welland tolls).

- The water-borne movement of coal to the Hamilton steel mills reduces the cost of inputs into the steel production process and thereby allows a lower unit cost of production. It is likely that, given the limitations of competition in the steel industry, any increase in cost of inputs would be passed on to selected consumers in the form of prices. Thus without access to seaway facilities it is likely that the cost of delivered coal at Hamilton would in-

crease by about 70 cents per short ton. This figure represents the difference between the delivered price of coal from the Virginia coal fields moving via rail unit train and the delivered price from the same origin via rail/lake movement. (A saving of 35 cents per ton would approximate the price differential to Toronto.) The net benefit to the steel companies would be approximately \$2.2 million per year. If no seaway facilities were provided it is likely that the steel companies would recoup this increase in cost through price increases rather than absorb it in profits.

The reduction in transportation costs, both inbound and outbound, has undoubtedly influenced Stelco to locate a major steel mill on Lake Erie at Nanticoke. This facility will likely eliminate any increases in Hamilton's steel-making capacity and in fact may transfer some of the benefits obtained by this port to the Lake Erie region.

The accompanying table shows the inputs of the Canadian steel industry in tons. The significance of Hamilton and the Seaway can be seen when comparing the volume of coal and iron ore received at Hamilton with the inputs to the total industry.

## Petroleum Trade

The movement of fuel oil and petroleum products is among the major commodity trades on the Great Lakes. These products are transferred from the refining centres on Lake Ontario and at Sarnia to consuming points throughout the lakes. In addition large volumes of oil and gasoline are shipped up-bound from Montreal through the St. Lawrence River canals to points on Lake Ontario and, to a minor extent, upper lake ports.

The location of major oil companies' refineries contributes to the shipment of petroleum products throughout the canal systems. For instance, the Shell refinery located at Oakville ships petroleum products



throughout the lakes to points such as Marathon, Port Colborne, Toronto and Hamilton; the Imperial Oil refinery at Montreal ships large volumes of petroleum products to ports on Lake Ontario and to a few ports on Lake Erie. In this case the Welland Canal acts as a barrier preventing further upbound shipments. This is due to the fact that Imperial Oil also operates a refinery at Sarnia which then supplies all ports upbound from the Welland Canal to the Lakehead.

The same situation prevails with the shipments of the Gulf Oil Company who operates refineries at both Montreal and Clarkson. Thus their supply for upper lake ports originates largely at Clarkson while the St. Lawrence River and Eastern Ontario ports are supplied by the Montreal refinery.

Other refineries located on the lakes are:

B.P. Oil Company, Montreal  
Canadian Petrofina, Montreal  
Texaco Canada, Port Credit  
Sun Oil, Sarnia

All of these refineries use the St. Lawrence Seaway to some extent. However, it is unlikely that the benefits are passed on to the consumers as the oil companies usually charge comparable prices for the products within geographical areas, (this may not be the case with certain large purchases). The inter-company competition will establish the market price and the refinery price will reflect that market price less the transportation costs. Thus insofar as these costs are lower than otherwise due to the benefits of the St. Lawrence Seaway, the benefit is likely to remain with the oil companies in the form of increased profits.

#### GENERAL CARGO FLOWS ON THE GREAT LAKES

One of the many claims that has been made of the St. Lawrence Seaway is that it would open up the heartland of North America to foreign shipping; the Seaway would attract vessels from throughout the world to handle the imports and exports from this vast industrial belt. While the Seaway has technically permitted ocean vessels to travel from the mouth of the St. Lawrence to the head of the lakes, such movements have not occurred to any significant extent.

As shown in the following table the volume of general cargo moving on the Great Lakes is unimpressive. In 1966 the total volume of general cargo moving through the St. Lawrence system was approximately 5.9 million tons. This volume is indeed insigni-

ficant when compared with the tonnage of goods handled annually by the Canadian railways alone.

A closer examination of the general cargo flows suggests that the Great Lakes industrial region is a net importer of cargo as over 83 per cent of the general cargo movements are inbound movements from foreign ports. Thus there is an obvious imbalance of traffic flows which further accentuates the difficulties for foreign vessels plying the lakes in general cargo trades. It appears that there are two reasons for the heavy import imbalance. The first is that the movement of outbound export

material comes under severe competitive pressures from both overland modes and Atlantic Coast ports. This phenomenon is evidenced both in Canada and the U.S. Preferential rail rates and lower coastal harbour charges direct most of the export cargo away from the Great Lakes ports.

A separate study carried out in 1968 on this subject showed that there is substantial evidence to suggest that export cargoes are attracted to east coast ports because of preferential rail charges and lower terminal charges at the National Harbours Board ports. The conclusions of this report were:

#### Distribution of General Cargo Flows on the St. Lawrence Seaway

Origin/Destination	Upbound		Downbound	
	Tons	Per Cent	Tons	Per Cent
<b>Montreal - Lake Ontario Section</b>				
Canada to Ontario	24,074	0.5	—	—
Ontario to U.S.A.	—	—	7,454	0.7
Ontario to Foreign	—	—	405,659	38.4
Foreign to Ontario	125	0.0	—	—
U.S.A. to Ontario	651,173	13.3	—	—
Sub Total	675,372	13.8	413,113	39.1
Canada to U.S.A.	438,137	8.9	—	—
U.S.A. to Canada	—	—	2,262	0.2
U.S.A. to Foreign	—	—	641,362	60.7
Foreign to U.S.A.	3,792,501	77.3	—	—
Sub Total	4,230,638	86.2	643,624	60.9
<b>Total</b>	<b>4,906,010</b>	<b>100.0</b>	<b>1,056,737</b>	<b>100.0</b>
<b>Welland Canal Section</b>				
Ontario to Ontario	2,636	0.1	—	—
Ontario to U.S.A.	89,500	2.1	7,454	1.0
Ontario to Foreign	—	—	86,410	11.9
Foreign to Ontario	34,288	0.8	—	—
U.S.A. to Ontario	—	—	—	—
Sub Total	126,424	2.9	93,864	12.9
Canada to U.S.A.	—	—	—	—
U.S.A. to Canada	438,100	10.1	2,237	0.3
U.S.A. to Foreign	—	—	631,561	86.8
Foreign to U.S.A.	3,781,953	87.0	—	—
Sub Total	4,220,053	97.1	633,798	87.1
<b>Total</b>	<b>4,346,477</b>	<b>100.0</b>	<b>727,662</b>	<b>100.0</b>

Note: Due to rounding, some percentages do not add to total.



There are three causes that prevent the Port of Toronto from increasing its (export) traffic in any significant measure. These are:

- **Railway Pricing Policy:** Railway rates are established in favour of the National Harbours Board Ports. Incentive loadings and competitive rate tariffs are not published for Toronto and therefore, in general, the ton-mile cost to move commodities from inland points to Toronto are greater than for moving the same commodities through Montreal.
- **Terminal Charges:** The harbour charges are approximately five to seven times larger in Toronto than in Montreal harbour. This rate differential in itself will alter the flow of commodities; however, when this benefit is combined with the railway pricing structure, the one tends to accentuate the other. The fact that the railways have a 27 cents per cwt. terminal advantage in using Montreal, tends to protect them from their competitors. That is, the inland truckers not only have to overcome railway line haul rates but must overcome the difference in terminal charges.
- **Ocean Differential:** The ocean differentials between Toronto and Montreal will be determined by two basic causes — the first is the cost of moving inland by 335 miles and the second the amount of cargo available at the inland port. Ocean shipping is reputed to have a very low *available-ton-mile cargo cost*, which is significantly below that of railway ton-mile cargo cost. Therefore, this factor should technically work in favour of the inland ports. The problem seems to occur when the *available-cargo factor* is considered. That is, the lower the amount of cargo available the higher the *actual ton-mile cost* of the cargo moved becomes and the less attractive the harbour is for cargo movements. This cycle continues with the ocean differential increasing to reflect the diminishing amount of cargo available, thus further perpetuating the cycle.

It should be clear then that the more the first two factors considered above react together to give advantage to the Montreal port and therefore attract cargoes away from the inland ports, the greater the effect they have on this third factor, i.e., the ocean differential.

The second reason is that in a number of cases the general cargo imports are inputs to

a production process where the finished product is marketed nationally or within the North American market. This factor was particularly evident in the analysis of cargoes handled at Toronto.

It is particularly significant to note that while the total volume of Great Lakes general cargo is rather limited, the volume of such cargo handled in Ontario is even more discouraging. The above table shows that of the total import traffic through the St. Lawrence River system the volume destined for Ontario ports was only 13.8 per cent, almost all of this destined to the Port of Toronto. The percentage of traffic moving through the Welland Canal (less Lake Ontario traffic) destined for Ontario ports was only 2.9 per cent, the balance moving to U.S. Great Lakes ports. Thus excluding the ports of Toronto and (to some minor extent) Hamilton the total volume of general cargo imports to Ontario ports is approximately 34,000 tons, this meagre balance being destined to the ports of Sarnia, Sault Ste. Marie and Port Arthur.

Toronto harbour enjoys about 13 per cent of the foreign imports of general cargo moving on the Great Lakes, however the balance of Ontario's ports do not really participate in this traffic at all. The U.S. lake ports receive the balance of the import general cargoes (approximately 86 per cent).

The export pattern for general cargo has about the same characteristics as imports with the exception that Toronto is far more important in the total picture than was the case with import cargoes. The upper lakes ports in Ontario exported 86,000 tons of general cargo and while these same ports handled only 2.9 per cent of the inbound shipments through the Welland, their outbound shipments totalled 13.0 per cent. Toronto, while it exported far less than it imported, accounted for approximately 37 per cent of all general cargo exports on the lakes. This relatively senior position does not indicate a particularly good performance for the Port of Toronto but rather an extremely poor performance for the upper lakes U.S. ports such as Cleveland, Detroit, Toledo, Chicago and Milwaukee. (As indicated these ports suffer from heavy competition from overland modes.)

It can be safely concluded that with the exception of the ports of Toronto and Hamilton the general cargo flows stimulated by the St. Lawrence Seaway produce little or no benefits to Ontario centres.

The benefits from such cargo flows into the Ports of Toronto and Hamilton can be quantified by using an income multiplier of \$23 per ton of general cargo. It is well known that general cargo has a larger economic impact than does bulk cargo; it produces higher dock worker salaries and higher levels of investment to handle such material. A survey of the Port of Milwaukee produced the estimate of \$23 of "direct community income" for each ton of general cargo handled. While this estimate may not be directly applicable to the Ports of Toronto and Hamilton it can reasonably be assumed to approximate the correct figure. If a range of from \$10 - \$20 per ton is used as a multiplier then the annual benefits to these two ports is from 9.2 to 18.4 million dollars in direct community income generated from these cargoes. The balance of the ports in Ontario do not enjoy such benefits.

### Containerization

In addition to looking at the past events as influenced by the St. Lawrence Seaway it may be advantageous to examine the future prospects of general cargo on the Seaway. It should be noted in the following that the handling of general cargo requires much more investment in facilities than does the movement of bulk cargoes. Therefore much of the Seaway's future in general cargo flows will be related to the level of investment in harbour facilities.

It is evident that tremendous changes are currently taking place in the methods of shipping and handling imports and exports. The containerized shipments are here to stay and thus this new technology is bound to destroy many of the old distribution patterns and rightfully so. However, there are certain characteristics of container services that will tend to perpetuate and even accelerate the present minority position of the Great Lakes ports relative to east coast ports.

Container services reduce the handling of individual units of cargo by grouping these together at origin (or some other consolidation point) and shipping a number of individual units as one large unit. This concept reduces handling costs and speeds the turn-around time of the vessels carrying the cargo. Both of these factors represent large reductions in the cost of moving cargo from port to port as well as through the port and, therefore, can reasonably be expected to reduce the export freight charges both for line



haul and for terminal portions of the expense. This will obviously aid in the expansion of world trade and should, particularly, provide an increased advantage to North American exporters as the European and Asian markets are brought closer in terms of cost of access.

While it is true that much of the Canadian export traffic is composed of bulk goods and, therefore, is not suitable for containerization, it is also true that through innovation more of the cargoes exported will become suitable for containerized handling. There can be little doubt that an efficient container port will act as a very attractive force for altering the current export distribution patterns.

An additional significant factor influencing the distribution of container services will be the decisions of ship owners (who have constructed containerships) on where to operate these ships. These decisions will be based upon the available terminal facilities at a port and the amount of (containerable) cargo that is available at that port. It is important to note that the amount of cargo that originates in the port's hinterland is not a significant aspect but rather the amount of cargo *available* at the port. In the case of Toronto, if the greater portion of the cargo originating in the port's hinterland is drained off to Montreal or other east coast ports, the cargo availability at this port will be greatly reduced and the port will be less attractive for ship owners looking for suitable ports from which to operate their container vessels.

Containerization is a very capital-intensive operation from both the ship owner's and the harbour authority's point of view. The container size alone demands that it be handled by mechanical equipment. The accommodation of containerships demands much more land area to handle the storage of the containers and large quay type sheds for breaking bulk and handling distribution of less than container load lots. Expensive transfer facilities must be provided if the intermodal aspects of the concept are to provide their full advantage to the shipper. Rail and truck connections to each finger pier are a must if fast efficient handling is to take place.

It can be seen then that vast amounts of capital are needed to equip a container port for efficient operation and without this capital investment it is unlikely that shipping companies, railroads, truckers and shippers will risk the return on their investment by

routing cargoes through an under-equipped harbour.

What does all this mean to Ontario and the ports of Toronto and possibly Hamilton? Simply this, that under the present harbour administration procedures and policies, Ontario harbours will pay considerably more for the capital needed to expand and construct harbour facilities capable of handling container vessels. The capital costs for the Port of Toronto are at least double and may range up to four times those of the Port of Montreal (1968 report on harbour charges and capital costs). It may even be unlikely that Toronto and Hamilton could provide container facilities under the present financial relative disadvantages that their respective managements are faced with. The Port of Montreal borrows or obtains capital on the account of the Federal Government, while the Port of Toronto must secure its capital on its own account. While Toronto will undoubtedly be forced to provide a container berth, it will be more costly and probably less competitive than corresponding facilities at the National Harbours Board ports.

A second factor of concern to Ontario is the relationship between National Harbours Board ports and the railroad charges. The movement to container shipments will force a recapitalization of all modes of transport if complete intermodal transportation is to be achieved. This means that both railways and truck lines will have to invest in expensive transfer facilities to handle these containers. The magnitude of the expense of converting facilities to handle the container is such that smaller trucking companies will not be willing to undertake this risk, unless they can anticipate an increasing share of the traffic. Under the current system of charges the railway rate structures prevent the truck carriers from competing on many of the export-import hauls and, therefore, it can be expected that when the railway terminal costs are reduced through containerized cargo handling, this condition will be further accentuated. The pace of this change will be increased by the capability of the financially secure railroad to undertake the investment and accept a greater risk than the truckers might be willing to undertake, with the possible exception of railway-owned trucking companies. However, it is questionable just how much competition for the railways could be expected from this source.

It now becomes even more important to be concerned with this aspect of transporta-

tion because, if under the conventional methods of shipping and cargo handling Ontario ports were at a decided disadvantage, they will be even more so under the forces of modern technology. As the cost of cargo becomes an even greater factor in the determination of harbour costs, more cargo will be attracted away from Ontario ports. This will have an effect on the total inland distribution system as cargo routes will readjust to a new "competitive situation".

## INVESTMENT IN THE SEAWAY

Investment in the Seaway ports is a very useful indicator of the development occurring in a port and of the growth rates expected in any one port. High investment indicates the potential for future growth and an expanding port, while low or negative investment can indicate a decrease in expectations.

Investment in Seaway ports and channels originates basically from three sources.

The St. Lawrence Seaway Authority is responsible for the Seaway channels, locks and canals, bridges, and remedial work. Since 1960 they have invested \$114,651,249 in these facilities. Seventy-nine per cent of this has gone into the building of channels, canals and locks.

All harbours in Ontario are the responsibility of the Federal Government. There are several harbours operating under a harbour commission generally composed of four to six commissioners responsible for the operation and financing of the port facilities. These include Hamilton, Toronto, Windsor, Oshawa and the Lakehead. There are also grain elevators at Prescott and Port Colborne which come under the jurisdiction of the National Harbours Board. All other public harbours are under the jurisdiction of the Department of Transport.

Public investment in Ontario ports, since the Seaway opened, totals \$88,250,465. Public harbours obtain funds from the Federal Treasury, commissioned harbours are financed by their Harbour Commissions, and the National Harbours Board finances its own installations through the federal government.

The pattern exhibited by public investment changes is closely linked to the growth patterns for all Great Lakes ports. The larger harbours, specifically Toronto, Hamilton and the Lakehead, have received 70.3 per cent of the public investment funds. This means that these three harbours have received over twice



Port	Dollars										Total
	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Amherstburg	25,963	63,780	56,728	25,299	77,001	70,288			56,965	47,583	
Blind River	31,614								72,421		
Brockville	139,944										
Collingwood		57,111	105,531		144,738		37,166	72,253	298,862	321,565	
Cobourg	54,014	95,347	51,483	27,005	26,278	22,667	19,077	93,458	149,669	330,217	189,520
Cornwall				26,670	471,566	111,691	26,161		259,740	66,239	
Goderich	100,327	124,340	98,560	21,702	33,911	283,840	587,156	271,878		18,956	185,003
Kingston		27,179		28,598			1,365	75,170	122,584	6,793	151,365
Kingsville	26,888	72,605			78,240		39,043	26,423		48,755	74,116
Leamington	392,456	265,453	148,777	97,930		231,439	19,499	75,131			152,399
Little Current	75,303			12,640				186,358	249,417	80,049	
Owen Sound	79,620	91,899			187,743	105,112	21,101	228,567			
Port Burwell		248,404	188,240	158,451	101,641	43,187	35,578	57,334	523,402	308,832	253,284
Parry Sound				34,493	146,264				133,421	227,392	18,146
Peelee Island				23,724	20,073	103,352	22,348				
Port Colborne	109,283	24,768	106,891		11,803	123,362					
Port Dover			154,076	46,499	72,561			81	4,000	56,783	426,985
Port Hope	59,901	80,449	33,038	45,317	46,588	29,979	18,052	17,326	43,453		45,341
Port Maitland		73,880	35,103	136,052	50,823						
Port Stanley											
St. Catharines	178,194	112,630	123,931	89,255	77,401						
Sarnia	38,850	98,856				199,648		212,007	248,638	63,763	
Sault Ste. Marie			76,032	144,825		109,606	7,101	269,290	57,325	94,488	
Port Credit	236,703	435,913	7,647	37,825	527,356	2,574,082	145,291		60,744		
Kincardine					48,131					74,301	138,414
Meaford	119,655	160,261									
Rondeau	28,349	77,870	260,134	42,212	413,357	47,998	123				
Wallaceburg				143,916							
Whitby	193,502	292,207	214,375	342,800	53,890	80,341	4,484	134,805	234,193		
Prescott Elevator		302,421	26,319	28,284	14,543			7,651	107,114		
Port Colborne Elevator				5,900	5,535						
Total (Port Colborne)	109,283	24,768	106,891	5,900	17,338	123,362		7,651	107,114		502,307
Oshawa		241,546	59,550	35,047	422,237	122,273	109,758	48,886	133,421	92,273	82,572
Sub-total											
											26,252,773
Toronto*											
Hamilton											
Port Arthur											
Sub-total											
											61,997,692
TOTAL											
											88,250,465

Totals include some ports not shown here.



as much new investment as all other Seaway ports put together.

Nine additional ports each received from \$1 to 5 million added investment. These nine ports accounted for 17.2 per cent of the total investment change or \$15.1 million. Port Credit is the largest of this group, with just over \$4 million. The others in this classification, e.g., Cobourg, Leamington, Port Stanley, and Oshawa, all range between one and two million dollars added investment.

The classification under \$1 million contains 32 ports and accounts for only 12.6 per cent of the total investment. Most of these ports, for example, Cornwall, Little Current, Kingston, and Port Maitland range between \$100,000 and \$1 million. There are a number of smaller ports with under \$100,000 added investment. These include Belleville, Sombra, Spanish River and Gananoque.

As well as government-provided facilities, many private companies own wharves and equipment in Seaway harbours. Their investment in new plant and equipment is an important part of the total investment.

Private investment in new facilities is also concentrated in the larger ports. Grain elevator unloading facilities decreased in several of the Georgian Bay ports. Grain loading facilities at Port Arthur increased by 9.8 per cent from 1961-1967. This accounted for 89 per cent of the total Seaway increase. Ore loading docks, in this same period, showed a general increase in investment. A new dock at Fort William accounted for 75.2 per cent of this total new investment. The remaining 24.8 per cent was spread among several Georgian Bay ports. The total storage capacity of ore unloading docks increased by 200 per cent along the Seaway. This increase was due to a large investment in ore unloading facilities at Hamilton which increased this port's capacity by 833 per cent.

Coal unloading docks showed a net increase in storage capacity from 1961 of 21.5 per cent. This increase was created by the addition of large facilities at Courtright

(Sarnia) and Toronto and a compensating decrease in capacity in a number of small Ontario ports such as Cardinal, Chatham, Gananoque, Napanee and Prescott, where minor docks were abandoned.

## CONCLUSIONS

The survey of Ontario Great Lakes ports has indicated the following characteristics are deterministic of the benefits provided by the St. Lawrence Seaway system:

- the cargo flows that received the major benefits are homogeneous products with a high density of movement and a relatively long length of haul, i.e., iron ore, grain, coal and petroleum;
- a small number of producers or industries reap the majority of benefits derived from the St. Lawrence Seaway, namely the U.S. and Canadian steel producers, iron ore companies in the Quebec Labrador area (largely U.S. controlled), U.S. coal mining companies, and the grain farming communities of both the Canadian and American prairies. While Ontario does participate in these trades their major benefits lie outside of Ontario;
- a small number of ports handle a majority of the cargo tonnage originating and terminating at Ontario harbours;
- a large percentage of the cargo loaded and unloaded in Ontario ports does not utilize any of the St. Lawrence Seaway facilities;
- only a very few Ontario ports, handling specialized cargoes, reap any significant benefits from the St. Lawrence Seaway;
- these major beneficiaries also experience the largest net increases in harbour investment;
- the smaller "minor" and "secondary" ports are engaged in the movement of local traffic, largely intra-lake movements, and do not participate in the benefits accruing from the Seaway facilities;

- the investment change in these smaller ports is extremely marginal and reflects the local character of the port and the use of smaller vessels (due in some cases to shallow harbour depth); much of this investment is related to a single plant and the facilities needed to handle its requirements.

Benefits to Ontario arise from:

- investment and employment in harbour facilities (major ports of Toronto, Hamilton and Port Arthur only);
- marginally lower prices for iron and steel products;
- marginally lower cost of thermal electric power generation;
- lower distribution costs for petroleum products which likely reflect very marginal price benefits to consumers.

It is perfectly clear then that after 10 years of operations the St. Lawrence Seaway has not been utilized to its full potential. It has not provided wide scale benefits to any but a few select areas. The Seaway does however represent a considerable asset to the Province and should be developed as such. The distribution of benefits suggests that any changes in the toll structure on the Welland Canal (particularly) and the St. Lawrence Seaway canals (generally) will be borne by a relatively few producers and much of the impact will fall outside of Ontario.

In addition, there are basic inequities in the administration of harbour facilities in Canada that tend to produce under-utilization of the Great Lakes facilities. (These inequities further affect the inland competition among all transportation modes.)

While upward revisions in the toll structure will surely not be welcomed there are other matters such as the level of investment in Great Lakes port facilities, the effects of national harbour policy, the rate of adoption of technological changes in transportation, that require consideration before this waterway can fully develop its potential.



# Selected Economic Indicators

## Leading Indicators

Average Weekly Hours Worked in Manufacturing, Ontario (Seasonally Adjusted)

Number

Scale A



New Orders in Manufacturing Industries, Canada (Seasonally Adjusted)

\$ Billion

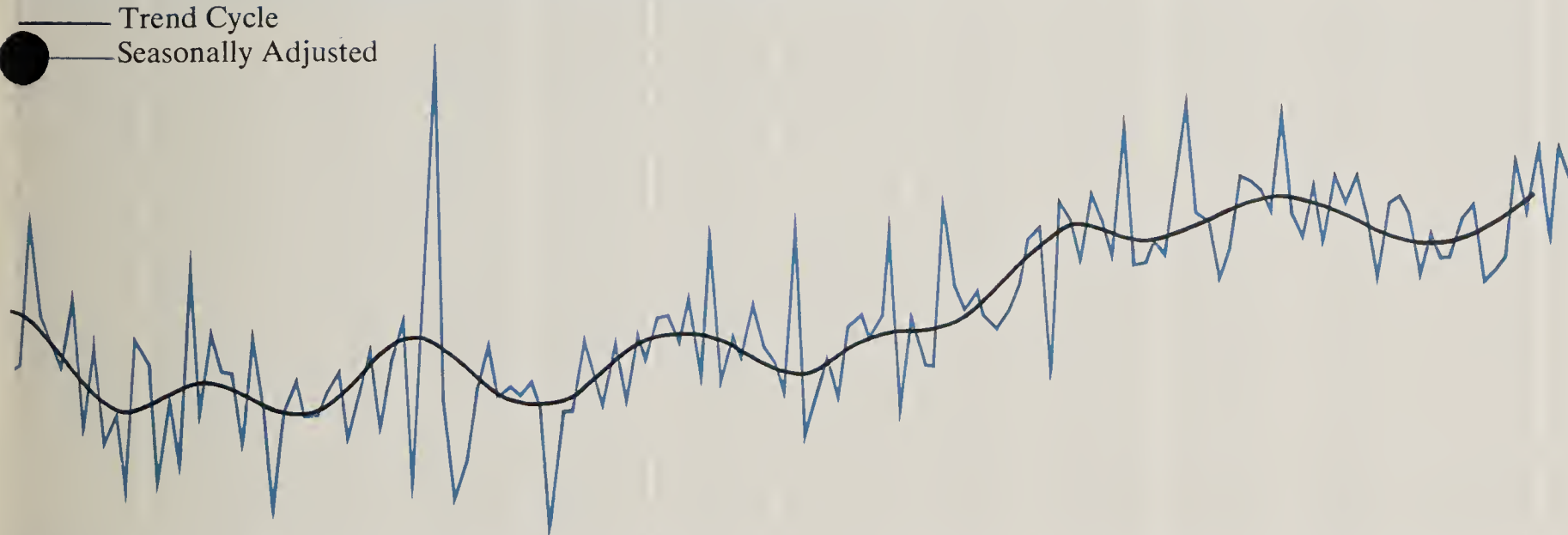
Scale L1



Business, Industrial and Engineering Construction Contracts, Ontario

\$ Million

Scale L2



Housing Starts in Centres of 10,000 Population and over, Ontario (Seasonally Adjusted at Annual Rates)

Thousand

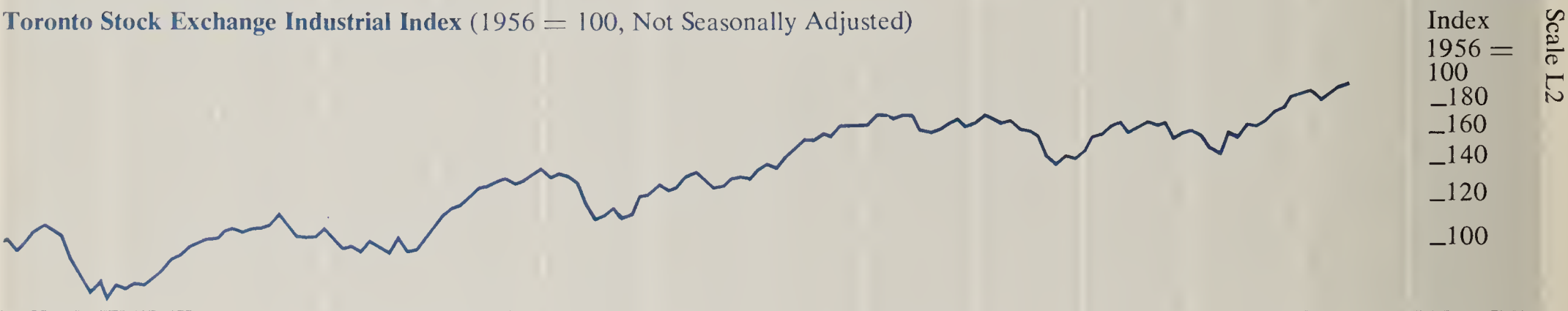
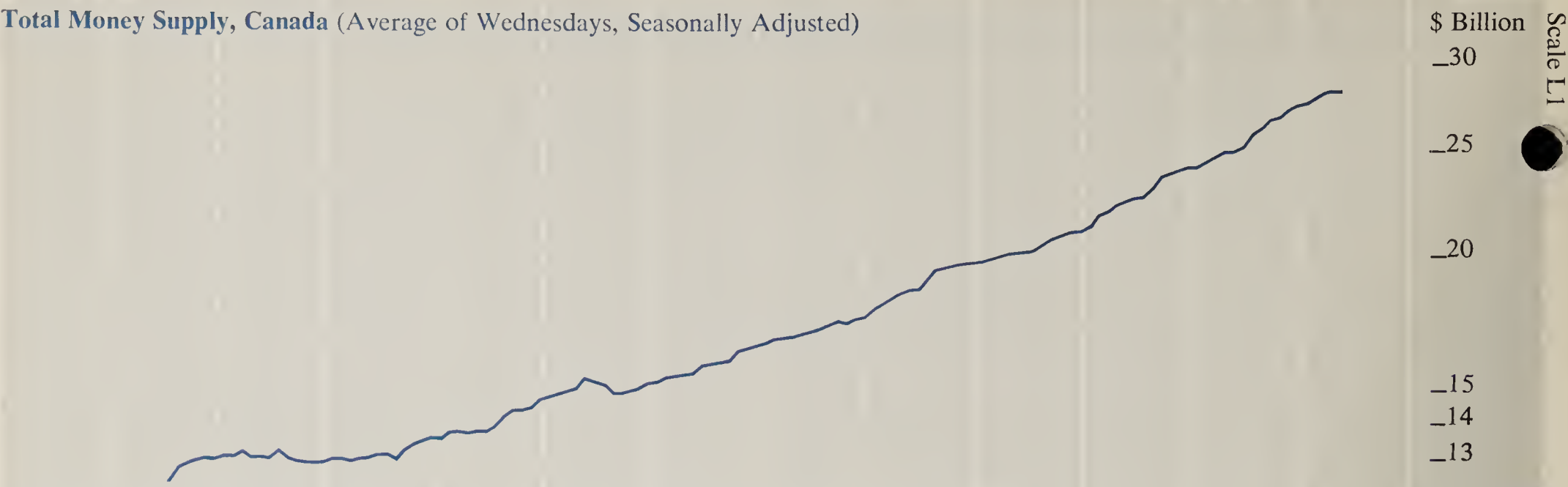
Scale L2



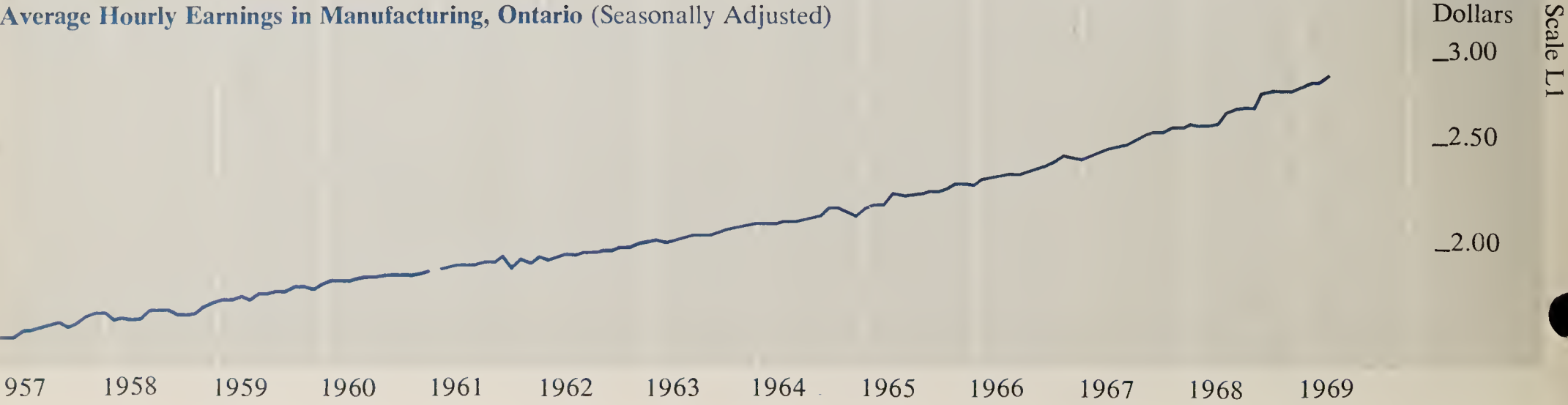
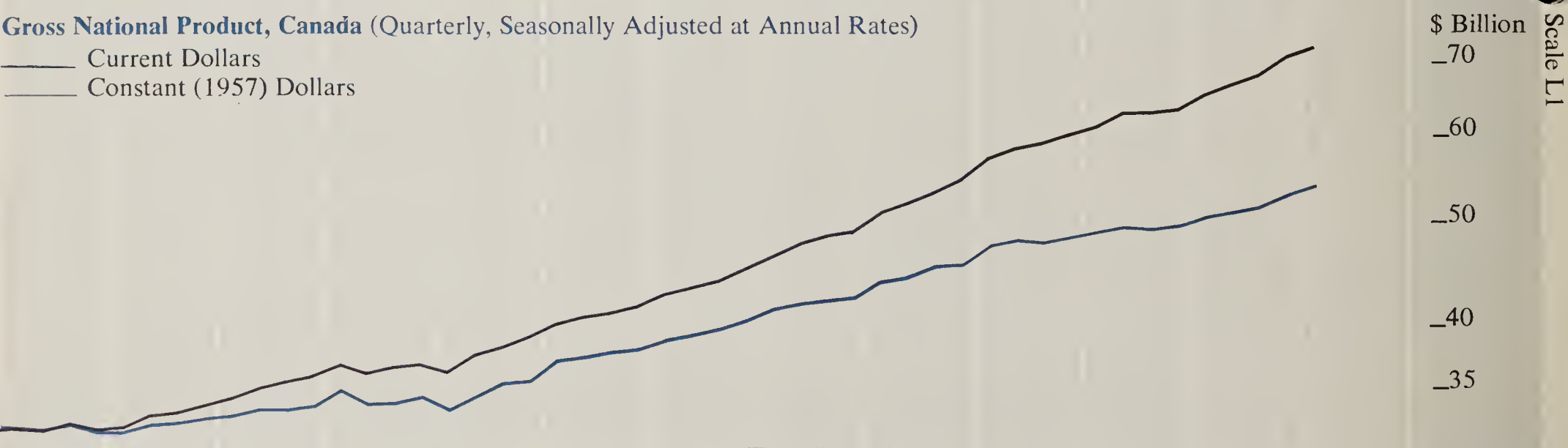
1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969



# Leading Indicators

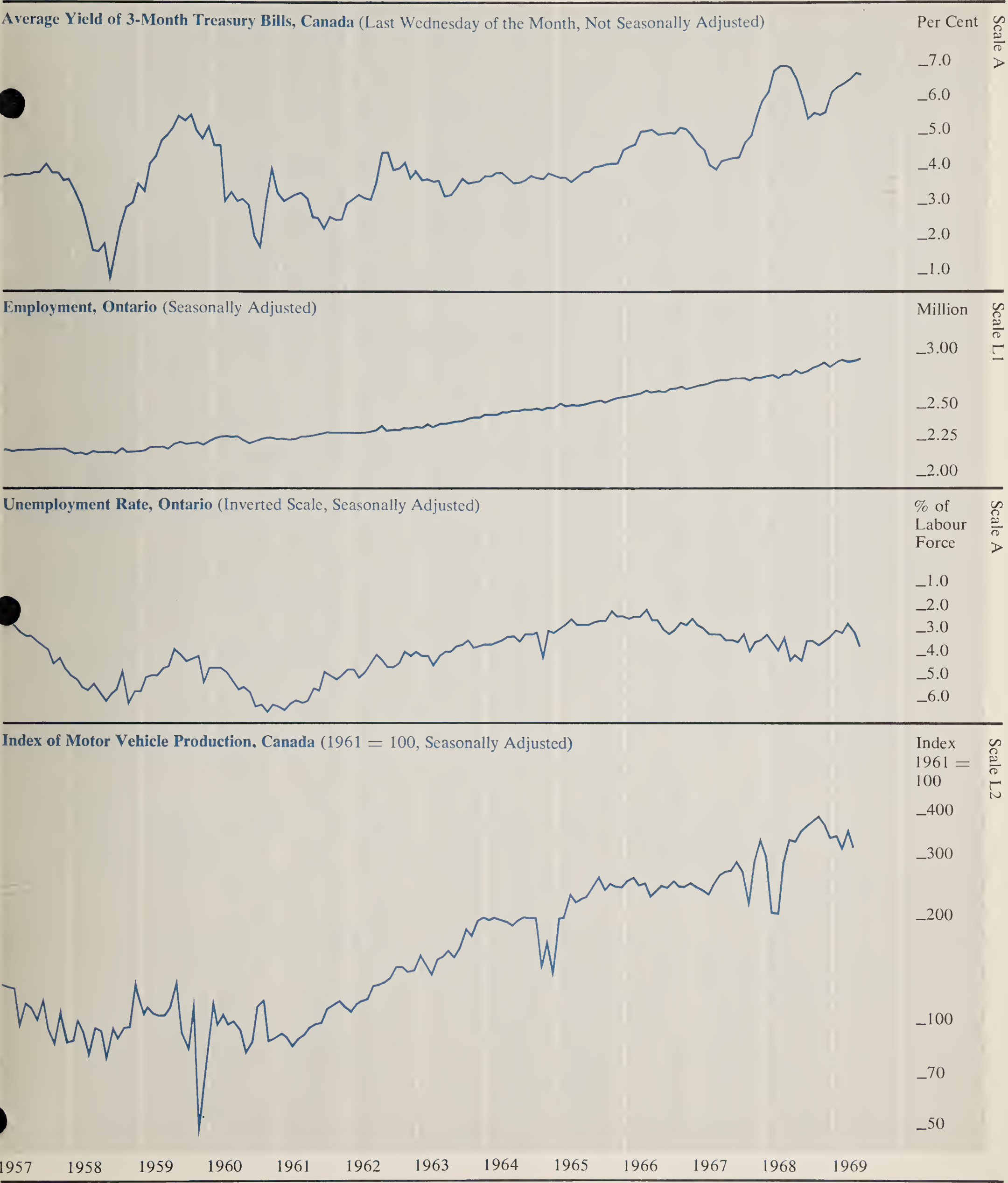


# Coincidental and Lagging Indicators





# Coincidental and Lagging Indicators





Seasonally Adjusted

		1968												1969				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May				
<b>Leading Indicators</b>																		
Average Weekly Hours Worked in Manufacturing		40.7	40.3	40.3	40.2	40.6	40.6	40.7	40.1	40.5	40.4	40.5						
\$ Million		3,360	3,349	3,377	3,420	3,601	3,581	3,577	3,430	3,518	3,693	3,542						
\$ Million		123.4	129.3	97.7	101.8	107.8	154.4	125.0	155.0	111.9	157.9	140.6						
Number		63,200	60,800	61,900	63,900	48,900	73,400	83,500	98,200	80,800	109,700	102,400	79,900	45,300				
\$ Million		25,046	25,501	25,868	26,293	26,632	26,768	27,124	27,400	27,669	27,927	28,251	28,331	28,336				
1956 = 100		157.87	166.61	165.93	169.02	176.37	179.61	187.29	188.93	192.47	185.20	190.58	195.31	197.23				
Number		50	46	49	28	36	46	48	34	57	59	55	58	48				
\$ Million		2.8	6.6	2.9	1.3	1.5	2.1	2.5	1.2	2.9	3.2	2.2	3.2	1.9				
Business Failures — Liabilities <sup>u</sup>																		
<b>Coincidental and Lagging Indicators</b>																		
Gross National Product <sup>c</sup> (Annual Rate)			66,328			67,824			70,152				71,884					
\$ Million																		
<b>Index of Industrial Production<sup>c</sup></b>																		
Total Manufacturing <sup>c</sup>		158.4	160.1	159.5	159.3	161.6	163.7	165.7	166.0	165.8	168.0	171.7	167.6	166.6				
Non-Durables <sup>c</sup>		158.1	159.7	157.8	158.0	161.3	163.7	165.9	165.7	164.2	167.5	171.3	167.6					
Durables <sup>c</sup>		142.8	146.1	142.1	139.8	142.8	144.6	148.0	149.8	147.6	150.8	153.7	150.4					
Mining <sup>c</sup>		176.8	176.2	177.0	180.2	183.9	187.0	187.8	185.0	184.5	187.8	192.8	188.6					
Electric Power and Gas Utilities <sup>c</sup>		153.1	154.6	156.1	154.3	152.9	154.0	155.1	154.4	159.7	160.6	161.1	156.3					
Primary Energy Demand (Annual Rate)		169.1	172.1	179.9	179.0	177.5	178.5	179.7	186.7	189.5	184.3	184.7	186.2					
BKWH		53.81	53.83	55.92	55.69	54.83	57.09	57.89	59.81	59.83	58.45							
\$ Million		1,097.2	1,115.9	1,063.5	1,103.5	1,115.0	1,176.4	1,203.2	1,201.8	1,214.9	1,266.5	1,266.3	1,170.2	1,241.5				
\$ Million		992.2	962.7	927.3	963.0	1,092.1	1,127.2	1,084.3	1,106.0	1,105.6	1,194.8	1,180.7	1,167.1	1,155.5				
Imports <sup>c</sup>																		
<b>Unclassified Indicators</b>																		
Foreign Exchange Reserves <sup>c,u</sup>		2,695	2,574	2,515	2,590	2,534	2,525	2,672	2,827	2,864	2,820	2,779	2,782	2,760				
Industrial Materials Price Index <sup>c,u</sup>		252.0	253.0	253.4	254.2	253.4	256.8	257.1	258.9	261.4	263.5	264.1	267.7	274.5				
Consumer Price Index <sup>c,u</sup>		119.3	119.7	120.4	120.7	121.1	121.4	121.9	122.3	122.6	122.6	123.2	124.6	124.9				

<sup>c</sup>Statistics for Canada.  
<sup>u</sup>Not seasonally adjusted.  
<sup>1</sup>Ontario less Toronto.



# Ontario Economic Review Feature Articles

1963		1965		1967	
May	Canada and the Exchange Rate	Jan.	Oil and Natural Gas in Ontario	Jan.-Feb.	(Annual Review)
June	Portable Pensions – The Ontario Approach	Feb.	Ontario Regional Population Projections 1961-1986	Mar.-Apr.	Fertility and Population Growth in Ontario
July	Population Growth in Ontario	March	Significant Economic Changes in Agriculture	May-June	Soybeans in Ontario: Production, Utilization and Prospects
Aug.	Whither the Tourist Industry			July-Aug.	Population Migration to and from Ontario
Sept.	Uranium and Nuclear Energy in Ontario	April	The Growth and Development of the Furniture Industry in Ontario	Sept.-Oct.	Towards a Theory of Provincial-Municipal Grants
Oct.	The Structure and Concentration of Ontario Manufacturing and Its Relative Position in Canada	May	The Institutional Investor and the Securities Market	Nov.-Dec.	Ontario's Demand for Industrial and Agricultural Machinery to 1976
Nov.	The Forest-Based Industries of the Northeastern Ontario Economic Region	June	The Growth and Development of the Motor Vehicle Industry in Ontario		
Dec.	Economic Developments in the Department of Highways	July	Perspective on Recent Price Movements in Canada		
1964		Aug.	The Background of Federal Unconditional Grants to the Provinces 1867-1887	1968	
Jan.	(Annual Review)	Sept.	A Progress Report on the Economic Atlas of Ontario	Jan.-Feb.	The Economy in 1967
Feb.	Tobacco – Ontario's Major Cash Crop	Oct.	Educational Achievement Levels in Ontario	Mar.-Apr.	Trade Liberalization and the Forest Industries
March	Canada's Requirements for New Business Machinery and Equipment from 1965 to 1975	Nov.	Concentration and Competition in Ontario's Fluid Milk Industry	May-June	Potato Marketing in Ontario
April	Some Impressions Arising from the First Year of Operation of the Ontario Development Agency	Dec.	(Annual Review)	July-Aug.	Budgetary Constraints to Policy Development
May	Ontario Labour Markets, 1953-1963			Sept.-Oct.	The Pattern of Consumer Expenditure at Provincial and Regional Level
June	The Approach of Regional Analysis	1966		Nov.-Dec.	Development of Information Flows for Economic and Financial Policy Formulation
July	The Niagara Economic Region: Present Characteristics and Prospects of the Future	Jan.-Feb.	Opportunity through On-the-Job Training		
Aug.	The Development of Forestry Policy	March	The Development of Ontario's Textile Industry	1969	
Sept.	An Index of Economic Health for Ontario Counties and Districts	April	"The New Economics" and the Province of Ontario	Jan.-Feb.	Preliminary Population Projections for Ontario 1971-1991
Oct.	Preliminary Indexes of Production in Ontario	May-June	Progress Under the Automotive Free Trade Agreement: Some Comments	Mar.-Apr.	The Solemnization of an Institutional Marriage (or the joining of the 'Treasury' with 'Economics')
Nov.	A Pilot Study on Regional Labour Income in Ontario	July	Ontario's New Housing Program	May-June	The Reform of Taxation and Government Structure in Ontario
Dec.	The Growth and Development of Primary Iron and Steel in Ontario	Aug.-Sept.	Economic Education	July-Aug.	St. Lawrence Seaway – Impact on Ontario
		Oct.-Nov.	The Distribution of Personal Income in Ontario and the Ten Economic Regions		
		Dec.	Canada and the U.S. Guidelines		





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# Ontario Economic Review

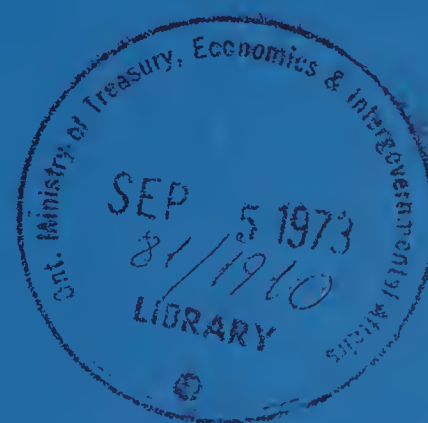
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Sept / Oct 1969  
Volume 7, Number 5

Department of Treasury and Economics

Hon. Charles S. MacNaughton, Treasurer of Ontario  
and Minister of Economics

H. Ian Macdonald, Deputy Minister



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NO. 5



# Ontario Economic Review

September/October 1969

Volume 7, Number 5

## The Ontario Economy

## Air Pollution and the Utilization of Natural Gas in Automotive Vehicles

W. Fruehauf, *Energy Economist*  
Department of Treasury and Economics

## Selected Economic Indicators

A publication of the  
Department of Treasury  
and Economics  
Government of Ontario

Hon. Charles S. MacNaughton  
*Treasurer of Ontario and  
Minister of Economics*  
H. Ian Macdonald  
*Deputy Minister*

The *Ontario Economic Review* is prepared and edited bimonthly in the Economic Analysis Branch of the Economic and Statistical Services Division, Department of Treasury and Economics. The review presents articles of interest as well as current information on economic activity in Ontario. Signed articles reflect the opinions of their authors and do not necessarily represent the views of the Department.

Subscriptions can be obtained free of charge by writing the Editor, *Ontario Economic Review*, Department of Treasury and Economics, Frost Building, Queen's Park, Toronto 181, Ontario.

### About the Review

The feature article for the September-October edition of the *Ontario Economic Review* presents excerpts from an article written by W. Fruehauf for inclusion in *Taschenbuch Erdgas*, 2nd Edition, West Germany, 1969. The primary objective of this article is to evaluate the use of liquefied natural gas as an alternative fuel for internal combustion engines to reduce air pollution.

Since a considerable degree of urban air pollution can be traced to the automobile it is becoming increasingly necessary that some method be found to abate these noxious emissions. The utilization of LNG and compressed natural gas as automotive fuel contributes significantly to the reduction of unburnt hydrocarbons, carbon monoxide and other pollutants while providing comparable operating characteristics to the use of gasoline.

Mr. Fruehauf is an economist with the Economic Planning Branch, Policy Planning Division of the Department of Treasury and Economics.

### Indicator Charts, Pages 10-12

Fluctuations in aggregate economic activity – commonly used to define business cycles – do not necessarily correspond with fluctuations in the individual activities which make up the aggregate. Instead different indicators of economic activity may vary with respect to both their rates of growth and the timing of their peaks and troughs: some may grow more rapidly than others, some change direction sooner.

Those activities which tend to assume a direction in advance of the aggregate – because they relate to future rather than present production – are referred to as leading indicators, and are widely used to anticipate the short-run future course of the overall economy. The charts on pages 10-12 in the *Ontario Economic Review* present a number of these leading indicators, as well as several which are coincidental to or lag behind the aggregate, to provide for the reader an opportunity to make such an evaluation.

While comparisons of the timing and direction of general changes in the various indicators can readily be made, great care must be exercised in making such a comparison of the amplitude of fluctuations. Of the three vertical scales used – 'A' (arithmetic) and 'L1' and 'L2' (logarithmic scales with one and two cycles respectively over a given vertical distance) – only the logarithmic scales can be used to compare relative changes in different indicators. *And this applies only when all series being compared are on the same logarithmic scale.* In such a situation all parallel lines represent equal rates of growth, the exact rate of growth being determined by the slope of the line.



The most prominent features of the first half of 1969 were the continuation of the rapid expansion in business activity, particularly in the first quarter, a further significant rise in prices, and increasingly stronger anti-inflationary measures at the federal level in both Canada and the United States. These measures include: monetary tightening, fiscal restraint, increased income taxes and emphatic government declarations of war on spiralling wages and prices.

These intensified efforts have been prompted by the fact that consumer prices have risen at a faster rate this year than at any time since the current inflationary spiral began in 1965. In 1965 prices rose 2.5 per cent. In the subsequent two years consumer prices rose by an average of 3.7 per cent a year and last year they rose by 4.1 per cent. In the first six months of this year consumer prices have averaged 4.3 per cent above the first half of 1968 and as a result of a sharp increase from February to August, prices in the first eight months are 5.1 per cent above those at the same time last year. From May to June the consumer food index rose 2.2 per cent and between July and August it has risen an additional 1.4 per cent. Higher house prices and mortgage interest rates have pushed housing costs still higher, although rent increases have been more moderate than last year. Increases in pre-paid medical premiums and in doctors' and dentists' fees in a number of cities have raised health and personal care costs and higher taxes increased alcohol and tobacco prices in April.

Where last year tighter fiscal policy alone failed to abate the trend in prices, it is expected that a continuation of such a policy in conjunction with (since March) an extremely tight monetary policy should now produce the desired results.

On a regional basis, Ontario's price position so far remains relatively favourable. According to the consumer price index for regional cities in Canada increases in Toronto and Ottawa are generally below the national average.

The fact that the economy has been slow to react to restraining measures has prompted the United States to extend the income tax surcharge to the end of 1969. In Canada, the newly created Prices and Incomes Commission has asked for commitments of voluntary restraint from industry, labour and government. Government expenditures at the federal level, including both current and

**Per Cent Growth in Consumer Price Index  
(Seven Months) 1969/68**

	Canada	Toronto	Ottawa
All Items	4.4	3.8	3.8
Housing	5.1	4.0	5.0
Food	4.0	3.5	2.2
Transportation	4.2	4.9	2.1
Clothing	2.7	2.4	3.1

capital, have increased at a slower pace than total expenditures in the economy during the first half of the year. In addition, there has been a major improvement in government revenues, since salary and wage levels in general have risen and are being taxed at higher rates. More recently the federal government has promised to limit expenditures by increasing efficiency and reducing public service employment. These developments lend tangible support to expectations of a budgetary surplus at the federal level in the current fiscal year. At the provincial and municipal levels of government, budget statements also indicate a swing away from large deficits towards surpluses during the current year.

The strong performance of personal consumption expenditures has been a key factor in the continuation of brisk economic activity.

While there has been a considerable increase in wages and salaries much of the additional income has been lost, not only by accelerating prices and more costly credit, but by substantial increases in taxes. The net result has been only a modest gain in personal disposable income, however, consumers have been trying to maintain their real standard of living and thus have reduced their rate of savings and incurred debt at an exceptionally high rate.

Credit, income and the reduction of savings now appear to be reaching their respective limits, consequently it is expected that the trend in consumer spending should move more closely in line with personal disposable income. The effect of this will probably show up most clearly in reduced outlays for durable goods. The incentives for personal saving have also become extremely attractive and should help to abate the expansionary influence of consumer spending as the year progresses.

Business capital investment has been another significant contributor to growth.

Despite indications of an impending business slowdown, Canadian corporations have stepped up 1969 capital spending plans from intentions reported at the beginning of the year.

The results of the recent DBS survey indicate that \$17,356 million of capital expenditures by all sectors of the Canadian economy are being planned for this year. This total represents an increase of 1.8 per cent over the total of \$17,046 million in intended capital outlays reported at the beginning of 1969. This new level for the year is 10.7 per cent higher than the preliminary estimates of \$15,678 million forecast in 1968.

The expected further increase in capital spending in the current year is reflected in the totals for both residential and non-residential types of construction but not in the estimates of purchases of new machinery and equipment. Expenditures on all new construction in 1969 are now expected to amount to \$11,384 million, about 3.0 per cent higher than the earlier estimate of \$11,034 million and about 12.0 per cent above the 1968 level of \$10,136 million. The latest total for machinery and equipment, at \$5,972 million, is only marginally lower than the first estimate of \$6,012 million and 8.0 per cent over the \$5,542 million for 1968. Capital spending plans by all three levels of government have been scaled down slightly from early-year intentions. Originally spending by governments and their supported institutions was expected to rise by nearly 8.0 per cent but now it is forecast to rise by approximately 7.0 per cent. The bulk of capital spending by government is at the provincial and municipal level.

On the basis of this most recent survey, Ontario's total investment will rise 16.3 per cent over 1968, instead of 15.5 per cent as indicated in the original January survey. This upward shift is the net effect of a small downward revision in government spending and an upward revision in business investment intentions. The following table indicates that manufacturing and housing intentions have been revised upward while the remaining non-governmental categories are down slightly. The chemical industry is responsible for much of the gain in manufacturing.

The motivation behind this upturn in capital investment is somewhat uncertain. Originally it was connected to the sharp upward swing in profits at the end of 1968 and to the absence of investment growth during the



## Private and Public Investment in Ontario

	\$ Million		Per Cent Change	
	1968	1969 (Revised)	Original Survey	Mid-year Revision <sup>1</sup>
Primary Industries and Construction	480	481	1.1	0.2
Manufacturing	1,001	1,388	31.6	38.7
Utilities	1,019	1,196	17.5	17.4
Trade, Finance, Commercial Services	586	720	24.4	22.8
Housing	1,132	1,324	14.9	17.0
Institutional Services and Government Departments	1,305	1,314	3.4	0.7
<b>Total</b>	<b>5,523</b>	<b>6,422</b>	<b>15.5</b>	<b>16.3</b>

<sup>1</sup>New annual per-cent gain based on summer survey.

Source: DBS and Department of Industry, Trade and Commerce.

past two years. In recent months however, "inflation psychosis" has assumed a more important role causing decision-makers to disregard the severe tightening of money markets. At present, indications are that even the selective postponement of depreciation allowances to capital investment in major Ontario centres has not produced the desired moderation and will simply add to escalating building costs.

However, the rising costs of financing, the severe limitations on amounts of funds available for new projects and the greater difficulties of self-financing as corporate profits after taxes level off, may lead to the prolonging of certain projects now under way and the deferral of others that might have been initiated in late 1969 and 1970.

Housing has been another major force in the economy's active pace, particularly in the first quarter. The increase in residential construction began in the fourth quarter of 1968. Ontario's housing starts advanced strongly under the stimulus of increased lending activity and special government funds. Time lags in the initiation of construction, particularly of large apartment projects, carried the rising number of starts over into early 1969. Urban housing starts in Ontario, seasonally adjusted at annual rates, rose from a low point of 60,100 units in the third quarter of 1968 to 84,200 in the fourth quarter. In the first quarter of 1969 the rate increased to 97,600 units, assuring sustained construction activity for at least the first half of the year.

In April residential starts dropped back to 79,900, followed by a substantial reduc-

tion in May to a seasonally adjusted level of 45,300. In June starts levelled off at 63,900 and have remained at approximately that level for the last three months.

The reason for the downturn is obvious — scarce capital with its accompanying high rates of interest. Because of this a series of changes have been made in NHA legislation, including the removal of the rate ceiling. However there is no indication that these efforts will alter the downward trend in housing.

Foreign trade has also played a prominent role in the growth of the economy this year. However, imports have set the pace in the first half of 1969, increasing 18.0 per cent over the total for the corresponding period in 1968 compared with an increase of 12.0 per cent for exports. As a result, the merchandise trade surplus has slipped to \$196 million in the first half of 1969 from \$502 million in the first half of last year.

As in 1968 the principal gains in dollar terms for both exports and imports have come from trade with the United States. Exports to the U.S. increased 17.0 per cent in the first six months of 1969 compared to the same period last year. Imports have also risen by 17.0 per cent. Higher exports to the U.S. accounted for almost all of the increase in total exports during the period. Similar to last year, the continued growth in shipments of motor vehicles and parts to the United States has made a significant contribution to the overall increase. Other commodities showing significant gains were lumber, wood

pulp and crude petroleum. Exports of wheat and flour have declined in the first six months reflecting the increased competition in world wheat markets.

On the import side the major source of Canadian imports is also the United States which once again emphasizes the degree of interrelationship between the two countries.

The increase in imports has caused a reduction in the merchandise trade surplus in the first half of this year. This situation combined with a continued large deficit on non-merchandise transactions has boosted the current account deficit to a level which has been estimated at more than twice that of the comparable 1968 period when the deficit was \$247 million.

However, the capital account in the balance of payments was in greater surplus than usual in the first half of 1969. With this larger surplus to counterbalance the increased current account deficit, the level of Canada's reserves of foreign exchange amounted to U.S. \$2,760 million at the end of June 1969. The main item in the large influx of funds to Canada during this period was higher portfolio investment by non-residents.

## National Accounts

According to a revised calculation of national income and expenditure accounts released recently by the Dominion Bureau of Statistics Canada has had a stronger economic growth rate since 1950 than past figures have indicated. The latest estimates show an expansion at an annual average rate of 5.1 per cent between 1950 and 1968, not 4.5 per cent — based on 1961 constant dollars — as previously published.

The revised accounts will provide a comprehensive historical revision of the national income and expenditure accounts for the period 1926 to 1968 and will include much data not previously available, thus representing an important improvement on the previous set of accounts.

The revised figures reflect changes in the Canadian method of calculating national accounts to conform with a system recommended by the United Nations. They incorporate new information from the more recent census, new data from Department of National Revenue taxation returns and additional information from the Corporation and Labour Unions Returns Act. A number of changes in definitions are included in the



revised accounts to reflect more accurately income and expenditure allocations in the economy. For example, hospital expenditures are now included in government expenditures rather than consumer expenditures. Similarly hospital capital spending is now included as a portion of government capital expenditure rather than as an item of business gross fixed investment.

In another change designed to improve constant-dollar estimates — price deflators for construction expenditures now include allowances for changes in productivity and profit margins.

The revised national accounts reveal that in current dollars the gross national product has grown at an average annual rate of 8.0 per cent, rather than the earlier reported figure of 7.6 per cent. Thus, the new figure of gross national product in 1968 is \$71.45 billion, or \$4.08 billion more than the figure of \$67.36 billion released earlier by DBS. The new gross national product level is 6.1 per cent higher than the old figure.

The new data also show that the ratio of personal saving as a percentage of personal disposable income is not as high as previously estimated. In 1968 the ratio was 7.6 per cent, not 9.0 per cent as reported earlier. Actual personal saving was \$3,516 million, not \$3,048 million.

The growth rate for wages, salaries and supplementary labour income has also been underestimated. The annual rate of growth is now estimated at 8.7 per cent, not 8.1 per cent. Personal income in 1968 was therefore \$55.17 billion, not \$51.62 billion as originally stated. Corporation profits before taxes have also grown at a faster annual rate than previously reported. The new annual growth rate, covering the past 18 years, is estimated at 6.2 per cent, rather than the earlier reported 4.8 per cent.

The comprehensive report providing detailed coverage on the revised basis for the years 1926 to 1968 is to be published later this year.

### **“Perspective 1975”**

The sixth annual review of the Economic Council of Canada predicts that the economic boom of the Sixties should continue through to 1975 producing a remarkable improvement in Canadian living standards and national prosperity. The potential gross national product for 1975 is estimated at \$100 billion in 1967 dollars, an increase of

\$34.4 billion over the 1967 level of \$65.6 billion. This would raise per capita output to \$4,324 from \$3,215 and would result in a 35.0 per cent increase in real living standards in the eight year period. The average growth rate from actual output in 1967 to potential output in 1975 is estimated at 5.5 per cent a year, compared to 5.1 per cent in the 1950-67 period and 6.0 per cent between 1961 and 1967. This growth rate would increase the annual volume of production by fifty per cent. Of the 5.5 per cent about two-thirds will be derived from increases in labour and capital, and one-third from productivity improvement.

One of the major sources of potential Canadian growth lies in the changing structure of the population, now that the large number of babies born after World War II have begun to reach maturity. Prior to 1967, the population was increasing at a rate of two per cent per annum while the labour force grew by 2.6 per cent annually. The Council calculates that in the 1967-1975 period population will increase by 1.7 per cent a year while the labour force will grow by 2.8 per cent — one of the highest growth rates among western industrialized nations. With an increasing proportion of the population available for productive work it will be necessary to expand business structures and equipment at a rate averaging over 5.5 per cent a year, compared with 4.6 per cent in the 1960-1967 period. In addition, the quality of the flow of new entrants to the labour force should rise as a result of higher educational achievements.

The council calculates that increased use of labour will contribute 2.5 per cent a year to real growth, compared with 2.4 per cent in 1960-1967, while the increased input of capital will contribute 1.2 per cent a year compared to 1.1 per cent.

The council continues to assume that the average annual rate of unemployment can be reduced to three per cent of the labour force. This goal assumes a reduction not only in seasonal swings but also in regional disparities that have caused the jobless rate to fall to inflationary levels in fast-growth areas while remaining high in other regions. It is extremely unlikely that regional disparities could be eliminated by 1975. Even the most successful regional development policies — not yet apparent — would take more than six years to produce the desired results.

The council also assumes — contrary to evidence in recent years — that an unemployment rate of three per cent will produce an average annual rate of price increase of two per cent for all prices and only 1.6 per cent for consumer prices in the 1967-1975 period. The consumer index rose 2.8 per cent in 1967, 4.1 per cent in 1968 and in August of this year was 5.1 per cent above the corresponding 1968 level. It is very unlikely that price increases in the remaining years will be small enough to produce a 1.6 per cent average for the entire period.

These estimates together with a 1.8 per cent average annual productivity improvement provide the 5.5 per cent annual increase in capacity required to bring potential output to \$100 billion by 1975. The capital investment needed to finance this growth is quite large — business fixed investment would have to rise from \$12.5 billion in 1967 to \$19.7 billion in 1975. However, the average annual increase of 5.9 per cent is in line with the historical trend and below the 8.1 per cent annual increase in the 1961-1967 period.

One of the most crucial assumptions underlying this strong performance is that the export market will remain strong. Exports provided the foundation of Canada's economic expansion in the sixties and the country could not hope for continuing strength if the large export industries were depressed.

The volume of consumer expenditure is expected to rise by more than fifty per cent between 1967 and 1975. The average annual increase is projected at 5.3 per cent. This would increase total consumer spending in Canada from \$39 billion in 1967 to \$59 billion (1967 prices) in 1975. Combined with the 1961-1967 high-growth period, the Council states that this would represent the longest, strongest sustained increase in consumer expenditure over the forty years for which statistics are available. On a per capita basis, consumer spending would rise by 3.6 per cent per annum to 1975, one of the most rapid rates of advance in the post-war period.

Nevertheless the consumer sector will decline in importance, partly because of a shift in some expenditures, such as on health care, from the private to the government sector. Consumers spent 64.3 per cent of gross national expenditure in 1961 and 59.4 per cent in 1967. By 1975, the council expects, consumers will account for only 56.6 per cent of all spending.



# Air Pollution and the Utilization of Natural Gas in Automotive Vehicles

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## Aspects of Environmental Air Pollution

In the course of his evolutionary process, man has been exposed to the forces of the natural environment. In many cases, he has successfully adapted to or coped with forces such as climate, meteorological conditions, predatory animals and microbiological predators. With increasing population and population density the man-made environment, to a large degree incapable of automatic renewal, is changing into a self-created enemy of man, in the form of air, water, soil, sonic and scenic pollution. Pollution results partly from greater intensity of use of the environment and the altered nature of wastes retarding or even prohibiting the natural process of environmental restoration.

Environmental air pollution constitutes a condition of the ambient air caused by the presence of substances, emitted by human activities, in forms and concentrations sufficient to interfere with comfort (nuisance effects of odors and soot), safety (decreased visibility), health (mainly respiratory illnesses), the full and undisturbed usage and value of property (corrosion and tarnish) as well as with animal life and vegetation.

Chemical interactions of compounds released to the atmosphere create through catalyses, condensation, oxidation, photo-chemical and free radical reactions, polymerisation and reduction new pollutants most of which have not been identified as yet. Atmospheric pollutants comprise solid and liquid particulate matter, in the forms of dust and aerosols, gases and vapours, in the forms of oxides, halides, organic and hydrogen sulfides, photo-chemical decomposition products, such as ozone, oxidants, peroxyacetyl nitrate and olefin, carbon monoxide, polycyclical hydrocarbons, aldehydes and other organic vapour contaminants, such as formaldehyde, acetaldehyde and acrolein. Carbon dioxide, playing an important part in the photosynthesis of green plants, is presently not regarded as a pollutant; however, with increasing releases from mainly combustion processes, carbon dioxide may become a pollutant in certain geographic locations and under certain conditions, since it is able to act as an atmospheric "blanket" causing abnormal temperature build-up.

A number of problem areas complicate pollution prevention and abatement measures. Lack of knowledge and problem-consciousness, inability to foresee the short- and long-term consequences of human activities, lack of individual respect and res-

pensibility for the preservation of common resources and the environment characterize a large portion of the so-called public opinion, behaviour and attitude toward air and other forms of pollution.

At the governmental level, comprehensive, coordinated and target-oriented pollution reduction and prevention is often overshadowed, retarded and sidetracked by fragmented interests, differences in opinion about jurisdictional competence, political ambitions and contentious opinions about the attraction, location and relocation of industry. In addition, a common belief that all or most of society's problems can be 'legislated away' is apt to discourage spontaneous action on the part of those responsible for air and other pollution by retarding or preventing their private efforts to combat pollution.

It is often disregarded that not only air quality standards but also the enforcement, the measurement of the effectiveness and remedies for the violation of such standards are of equal significance. In designing pollution prevention and abatement legislation and criteria, disagreement prevails as to the approach to be taken against pollution. By limiting the percentage content of pollution-causing substances in fuels, only short-term benefits, if any, can be expected since the mere growth in fuel consumption may compensate or even overcompensate for the effects of fuel specifications.

In view of imminent governmental anti-pollution measures, industry often expresses more concern about the preservation of the somewhat nebulous concept of free enterprise and competition, than about the prevention or abatement of air and other pollution. An unjustifiably narrow profit concept often tends to disregard socio-economic costs arising from environmental pollution.

Among scientists disagreement prevails as to the levels of tolerance to be applied to pollution prevention and abatement standards. Lacking consensus about the necessity of concentrating on those pollutants which should be monitored and related to health and other measures is another problem area tending to retard anti-pollution action. The influence of meteorological factors adversely affects the interpretation of air pollution data and the validity of monitorings. This problem is aggravated by the difficulty of identifying and quantifying environmental pollutants caused by human activities, by natural phenomena as well as by occupational and

personal pollution. Oxides of nitrogen and certain photo-chemical decomposition products are formed by electrical discharges of storms but also result from combustion processes. The present state of the art frequently does not allow for the establishment of a functional relationship between the use of certain substances, the pollutants released from such substances and the effects of such pollutants on man and his environment. The success and effectiveness of enforcing air quality criteria often cannot readily be identified and measured — if at all — which casts, in many instances, some doubt on the necessity, validity and justification of such criteria.

Consequently, the need prevails for research into the prevention or reduction of air pollution in order to establish effective, meaningful and economic anti-pollution policies and measures. Governmental and government-sponsored research may have to be re-oriented and directed towards fields where socio-economic benefits exceed and precede private profit motives as well as certain somewhat questionable achievements of so-called technological progress. Co-operation between the public and government is expected to enhance the success of anti-pollution actions. The response to governmental air-pollution prevention and abatement policies and measures has been far from unequivocal; however there are a number of encouraging developments in some industries reflecting interest and problem-consciousness. Recent developments in the field of air pollution caused by automotive vehicles have been investigated and serve as an expression of industrial participation in preventing and reducing such pollution.

## AUTOMOTIVE VEHICLE FUELS OTHER THAN GASOLINE AND DIESEL FUEL

In a number of continental European countries, electric battery-powered and LPG (liquefied petroleum gases) fuelled delivery and pick-up trucks have been a common sight for a number of years. The North American interest in electric cars is reflected in research and development activities of auto producers and other interested parties. Favoured by the construction and operation of LNG facilities (for liquefaction, storage and vaporization) and by its chemical properties, natural gas, in both its liquefied and gaseous state, is developing into a potential automotive fuel. Marketing efforts to find additional applications for natural gas, the



construction of LNG facilities and the economic necessity of their optimum utilization are now meeting with pollution prevention and abatement policies and measures, and creating a growing market potential for LNG ranging from its usage as a rocket fuel to its utilization in internal combustion engines of automotive vehicles.

At present, tests and investigations of various techno-economical aspects of LNG utilization in automotive vehicles are still continuing. Thus, the following presentation is merely to evaluate past experience of LNG utilization acquired on the basis of tests. In addition, mention is made of investigations of the use of compressed natural gas.

### Utilization of LNG in Automotive Vehicles

Although the utilization of LNG pertains to heavy trucks and passenger cars, the following investigation is restricted to pick-up trucks and passenger cars.

The utilization of LNG in pick-up trucks and in passenger cars creates special requirements. For this purpose the gasoline-powered engines of the contemplated vehicles were modified, and instead of conventional fuel tanks specially designed LNG tanks were installed. Engine modifications included the following: each of the vehicles is equipped with a cylindrical thermo-insulated double tank (cryogenic tank) with an operating pressure of about 30 psig and a volume of 7.9 gallons<sup>1</sup> and 49.96 gallons respectively depending on the application. The inner tank consists of stainless 9 per cent nickel steel. The space between the inner and the carbon steel outer tank is filled with perlite. LNG stored at atmospheric pressure leaves the fuel tank and enters a heat-exchanging copper tube serving as a pre-vaporizer in which the temperature of the ambient air and the engine exhaust heat initiate the conversion of the natural gas from its liquid into the gaseous phase. A copper fuel pipe carries the pre-vaporized LNG into an air cooler for complete vaporization. A specially installed gas regulator controls the inflow of the natural gas carburetor for complete blending of natural gas with air during which evaporation losses are practically eliminated. The cooling energy set free by the vaporizing LNG sub-cools the combustion air and creates a fuel-combustion air mixture 15 per cent more dense than the comparable mixture in conventional gasoline operation.

Under normal storage conditions — 14.75 psia and -258°F, the vaporization of one gallon of LNG into 10.03986 cubic feet of vapor at -250°F absorbs 924.724 BTU per gallon vaporized. Raising the temperature of the above 10.03986 cubic feet from -250°F to 60°F will absorb another 653.311 BTU per gallon. Therefore, the total heat-sink capacity<sup>1</sup> of LNG is 1,578.035 BTU per gallon under the assumed conditions.

In order to adjust the valve action of the engine to natural gas — which has slower combustion characteristics than gasoline, and for a more complete combustion of the natural gas, a special camshaft was installed producing about 10-15 per cent more dwell<sup>2</sup> (compared with gasoline operation). A slight adjustment of the ignition time of the 6- and V-8 cylinder engines used is also required. Finally, the engine heads were milled in order to increase the compression ratio to between 10:1 and 14:1.

These were the actual modifications and installations. Depending on the vehicle, they required expenditures of up to U.S. \$500 (Cdn. \$1 = U.S. \$0.9275) of which the cryogenic tank accounted for some U.S. \$300. Economies of scale may reduce the required expenditures to about U.S. \$300 per vehicle.

### The Use of Compressed Natural Gas in Pick-up Trucks and Passenger Cars

Similar to LNG, utilization of compressed natural gas is suited for pick-up trucks and passenger cars.

At the end of November 1968, the first test results became available regarding the utilization of compressed natural gas in conventional gasoline engines. Within a series of tests the following four vehicles were converted to dual-fuel operation: 1 pick-up truck (1968 model); 1 passenger car (1965 model) without exhaust control devices and 1 passenger car (1966 model) with exhaust control devices; an additional passenger car (1968 model) which could be fuelled with either LNG or gasoline.

In addition to the already existing gasoline tank, each of the first three cars was equipped with a natural gas pressure vessel with an operating pressure of about 2,000 psig. In the fourth vehicle, a 49.96 gallon LNG tank — as described above — was installed in addition to the conventional gasoline tank. The LNG tank holds at -258°F a natural gas equivalent of 5 MSCF<sup>3</sup>.

In the gasoline/natural gas-fuelled vehicles, compressed natural gas is released

from the pressure storage vessel during operation at moderate and frequently varying speeds in heavy traffic and during traffic congestion, when the emission of noxious engine-combustion products is particularly critical. When operated outside this critical phase, a switch located on the instrument panel shuts off the natural gas supply and opens the gasoline fuel pipe. During the operation on natural gas, gas is released from the pressurized storage vessel and flows in a high-pressure fuel pipe to a series of pressure-relief valves. From there natural gas flows through an "on-off" solenoid valve into the natural gas/air blender. The only essential modifications consist of the installation of the natural gas pressure tank, the solenoid valve and carburetor modifications.

### OPERATING EXPERIENCE WITH LIQUEFIED AND GASEOUS NATURAL GAS AS ENGINE FUEL

The most important operating experience with LNG and compressed natural gas as automotive engine fuel is reflected in a significant reduction of the air-pollution-causing exhaust emissions.

#### Reduction of Air Pollution Through LNG

For the 1967 model passenger cars the respective government agencies have limited the emissions of unburnt hydrocarbons to 275 ppm<sup>1</sup> and of carbon monoxide to 1.5 per cent by volume. Compared to these standards the following values were reached during LNG operation:

	Unburnt Hydrocarbons ppm	Carbon Monoxide per cent
Cold start	114.3	0.11
Warm start	109.0	0.12

The following end values were reached as a result of the indicated installations and modifications: 1) After installation of a natural gas carburetor and increase of the compression ratio — 175 ppm; 2) After installation of an air-cooling vaporizer — 160 ppm; 3) After installation of a special camshaft — 111-112 ppm. LNG operation and installation of a natural gas carburetor reduced the carbon monoxide of the exhaust from about 1.45 per cent to 0.2 per cent. Increase of the compression ratio reduced the carbon monoxide value to 0.11 per cent.

Apart from these compounds, the reactivity index was determined as an additional exhaust criterion. This index indicates the relative activity of the engine exhaust in its effect as origin of photochemical oxidation.

<sup>1</sup>gallon = Imperial gallon (throughout this article).

<sup>1</sup>ability of a solid, liquid or gaseous matter to absorb heat.

<sup>2</sup>torque.

<sup>3</sup>1,000 standard cubic feet.

<sup>1</sup>parts per million.



The following was determined:

	Aromatics	Olefins	Paraffins	Reactivity Index <sup>2</sup>
Passenger Car <sup>1</sup>	42	376	292	710
Pick-up Truck	84	344	258	686

<sup>1</sup>1968 model, without engine exhaust modifications.  
<sup>2</sup>Gasoline engines without exhaust-control devices reached reactivity indexes as high as 4,535.

Exhaust Levels for 1968 Model Vehicles

	Unburnt Hydrocarbons		Carbon Monoxide	
	Beginning of Test	After 42,000 miles	Beginning of Test	After 42,000 miles
Gasoline	225 ppm	240 ppm	1.0 per cent	1.2 per cent
LNG	118 ppm	93 ppm	0.17 per cent	0.21 per cent

The values given for LNG operation appear to be representative for the respective companies performing the tests. Through further modifications of the respective vehicles it appears possible to reach the exhaust values given previously.

The LNG used in these tests has been — with the exception of nitrogen — purged of the following trace elements prior to liquefaction: acid gases; carbon dioxide; heavy hydrocarbons (including propane and butane); sulphur and water. Thereafter, the LNG consisted of about 92 per cent methane, 6-7 per cent ethane and 1 per cent nitrogen.

The exhaust emissions mentioned should indicate the potential of the use of LNG as automotive fuel.

REDUCTION OF AIR POLLUTION THROUGH COMPRESSED NATURAL GAS

Similar to the operation with LNG, compressed natural gas utilized as engine fuel offers a significant advantage in reducing the release of noxious vehicle emissions.

After continuous tests, the following results were obtained for the 1965 and 1968 model cars:

	Compressed Natural Gas		Air Quality Standards	Gasoline	
	Model		Model	Model	
	1965	1968	1968	1965	1968
Carbon Monoxide	0.14%	0.13%	1.5%	4.40%	1.30%
Olefins	13.3 ppm	8.8 ppm	—	289.0 ppm	110.5 ppm
Other unburnt hydrocarbons	119.7 ppm	79.2 ppm	—	536.0 ppm	110.5 ppm
Total unburnt hydrocarbons	133.0 ppm	88.0 ppm	275 ppm	825.0 ppm	221.0 ppm
Nitrogen Oxides	337.0 ppm	554.0 ppm	—	1,315.0 ppm	1,070.0 ppm

The following table indicates the percentage reduction of the exhaust levels achieved by the utilization of compressed natural gas as compared to gasoline:

	Model	
	1965 Per Cent	1968 Per Cent
Carbon Monoxide	96.8	80.0
Olefins	95.4	92.0
Other unburnt hydrocarbons	77.7	28.3
Total unburnt hydrocarbons	83.9	60.2
Nitrogen Oxides	74.4	48.2

Carbon monoxide combines with blood hemoglobin some 210 times faster than oxygen, thereby reducing the blood's oxygen-carrying capability and possibly leading to autoxia. Internal combustion engines are regarded as the main source of carbon monoxide pollution.

Among the unburnt hydrocarbons, olefins contribute most strongly to the formation of photochemical smog. Some of the polycyclical hydrocarbons have carcinogenic properties and contribute to smog formation. Formaldehyde, acetaldehyde, acrolein and

other lower aldehydes are produced through incomplete oxidation of motor fuel and lubricating oil and contribute to eye irritation.

Oxides of nitrogen penetrate the peripheral airways and cause irritation. They also contribute to reduced visibility and to corrosion and other forms of deterioration of a number of materials. The reduction of the oxides of nitrogen belonging to the most noxious engine-exhaust compounds is an important task.

In addition to exhaust emissions from internal combustion engines, smog-forming pollutants also result from evaporative emissions of gasoline. By lowering the volatility of gasoline, such evaporative emissions can be reduced, however, only at the expense of increasing exhaust emissions. Instead of changing the volatility, the composition of gasoline could be altered in order to reduce evaporative emissions without inducing an increase in exhaust emissions.

COMPARISON OF THE OPERATING COSTS BETWEEN GASOLINE AND LIQUEFIED AND COMPRESSED NATURAL GAS

In addition to the reduction of engine exhaust emissions, a relevant contribution of natural gas as automotive fuel can be seen in the reduction of fuel costs as compared to the utilization of gasoline. Compared to gasoline operation, power development and acceleration are similar in the case of LNG operation. The lower specific gravity of LNG — compared to gasoline — compensates for the additional weight of the LNG tank. Similarly, the low specific weight of compressed natural gas causes a certain reduction of the weight increase resulting from the installation of a second fuel tank.

Gasoline Versus LNG

During continuous operation at various test speeds averaging 40 mph, gasoline consumption was 0.047447 gallons per mile and LNG consumption 0.066348 gallons per mile. The last figure does not include boil-off losses of some two per cent per 24 hours of the tank content for idling vehicles. In the case of idling, the total tank content of 7.91046 gallons would evaporate in about 1,200 hours. This rate of loss was experienced by one company utilizing LNG. On the contrary, another company stated that no boil-off occurs during a night's stand-still of the dual-fuelled vehicle (LNG/gasoline) as



the large cryogenic tank (49.9608 gallons) is capable of withstanding the rise in pressure caused by LNG vaporizing in the tank during the vehicle's down-time. The LNG fuel line is designed so that, when the internal tank pressure rises above normal atmospheric pressure due to heat leaking into the tank, the vaporized LNG can be used for initial engine startup. After the combustion of the accumulated gas vapours the internal tank pressure — increased by heat penetration — decreases again to atmospheric pressure.

In the case of the first-mentioned company, vehicle stand-still caused a two per cent loss of the tank volume during a 24-hour period. If a daily vehicle utilization of one hour is assumed, during which boil-off losses do not occur, then instead of 0.158209 gallons per 24 hours, only 0.151616 gallons per 24 hours would be lost. At LNG cost of U.S. 10.20799 cents per gallon and at a daily driving distance of 40 miles a boil-off cost of 0.03869 cents per mile will be incurred. At the LNG cost and daily driving distance referred to, the straight fuel cost amounts to 0.67728 cents per mile. In comparison with this cost, gasoline cost excluding taxes amounts to 27.50153 cents per gallon and the corresponding comparable straight gasoline cost is 1.30486 cents per mile.

If vehicle modification expenditures of U.S. \$500 per vehicle are assumed, a vehicle lifetime of five years and interest of six per cent per annum, then, at straight-line depreciation, the annual amortization cost is U.S. \$118.767, i.e. 0.81340 cents per mile. It is assumed that the capital costs of the vehicles fuelled with LNG and gasoline are otherwise equal. Therefore the mileage cost for LNG operation amounts to:

U.S. cents	
per mile	
0.81340	Amortization cost
0.67728	Straight LNG fuel costs
0.03869	Boil-off cost
1.52937	Total operating cost

In comparison, gasoline cost exclusive of taxes is 1.30486 cents per mile.

At a reduction of the vehicle modification cost from U.S. \$500 to U.S. \$300 per vehicle, amortization cost for LNG operation is 0.48804 cents per mile, and total operating cost amounts to 1.20401 cents per mile. In some instances, lower LNG maintenance costs (compared to gasoline operation) were not considered.

**The LNG production cost in Southern California amounts to:**

NG purchasing cost	32.6 cents per MCF
Liquefaction cost	16.3 cents per MCF
Storage cost	+ 8.6 cents per MCF
Total cost	57.5 cents per MCF

Volume discounts can reduce the LNG cost to 7.20564 cents per gallon and the total operating cost under the assumed conditions to 0.99343 cents per mile.

**Gasoline Versus Compressed Natural Gas**

Tests of dual-fuelled vehicles (gasoline and compressed natural gas) resulted in an average natural gas consumption of 6.9444 cu. ft. per mile. At natural gas cost (low volume consumers) of U.S. 75 cents per MCF, straight natural gas fuel cost was 0.5208 cents per mile. Operation with gasoline required 0.06122 gallons per mile, the cost of which exclusive of taxes amounted to 27.50153 cents per gallon or 1.6836 cents per mile.

At vehicle-modification expenditures of U.S. \$300 required to convert each of the contemplated vehicles to dual-fuel operation

(reduction to at least \$220 per vehicle is possible), at a lifetime of five years, an interest rate of six per cent per annum, straight-line depreciation and at a daily driving distance of 40 miles, the average specific amortization cost is 0.48804 cents per mile. At modification expenditures of U.S. \$220 per vehicle, the average specific amortization cost would be 0.35788 cents per mile. Therefore, the total operating costs (fuel plus amortization) amounts to 1.00884 cents per mile and 0.87868 cents per mile respectively. For the above comparison, the lower engine performance for natural gas operation (compared with gasoline) has not been considered.

Compared with the calculated operating cost of natural gas operation, the cost of gasoline exclusive of taxes amounts to 1.6836 cents per mile. Therefore, depending on the magnitude of the vehicle-modification expenditures, the use of natural gas provides operating cost savings of 0.67476 cents per mile and 0.80492 cents per mile respectively. Increased driving distances per day reduce the specific amortization cost correspondingly.

**CONCLUSIONS**

In summary, the calculated values from the comparison of operating costs are presented.

**Operating Costs for the Utilization of LNG and Gasoline**

	No Modification Expenditures	Modification Expenditures of	
		U.S. \$500	U.S. \$300
Gasoline	1.30486 cents per mile		
LNG		1.52937 cents per mile	1.120401 cents per mile
Difference		—0.22451 cents per mile	+0.184459 cents per mile

**Operating Costs for the Alternate Utilization of Compressed Natural Gas and Gasoline**

	No Applicable Modification Expenditures	Modification Expenditures of	
		U.S. \$300	U.S. \$220
Gasoline	1.6836 cents per mile		
NG		1.00884 cents per mile	0.87868 cents per mile
Difference		+0.67476 cents per mile	+0.80492 cents per mile

+ = Calculated savings compared with gasoline utilization.  
— = Calculated additional costs compared with gasoline utilization.



As mentioned, the most significant contribution of the use of LNG and compressed natural gas as automotive fuel compared to gasoline can be seen in the large reduction of air pollution caused by automotive vehicle emissions in the form of unburnt hydrocarbons, carbon monoxide and nitrogen oxides. The utilization of LNG in modified gasoline and diesel engines offers operating characteristics comparable to the use of gasoline or diesel oil. This has been demonstrated in road and dynamometric tests. Instead of converted gasoline or diesel engines, specially designed LNG engines are capable of increasing the advantages offered by LNG utilization. In addition, with large-scale production of cryogenic tanks and improved thermo-insulation of these tanks it is possible to reduce the vehicle capital cost in the case of LNG utilization. The cleanliness of LNG reduces cylinder impurities and lessens the necessity for frequent oil changes and spark plug cleaning.

The combustion of compressed natural gas in dual-fuel systems as in the case of LNG, reduces the costs of oil changes and additional maintenance compared to gasoline utilization. In addition, natural gas offers fuel cost savings. Compared to gasoline the favourable combustion characteristics of natural gas reduce the formation of oil slurry and the dilution of engine oil. Moreover, natural gas does not act as an oil solvent when passing the cylinder rings (especially when the engine is idling).

Compared to gasoline, combustion of natural gas offers a quieter engine run, as natural gas enters the carburetor in gaseous state and is continuously and uniformly mixed with air. Contrary to natural gas utilization, gasoline does not always completely vaporize and consequently does not burn evenly.

An additional advantage results from the relatively high octane rating of about 130 for natural gas without the addition of tetraethyl lead or other additives. This eliminates the emission of lead compounds into the atmosphere and leading of the engines.

### Technical Problems

Particular technical problems arise from the use of LNG in automotive vehicles through the increase in fuel tank pressure caused by vaporizing LNG, to be more exact, methane whose boiling point is lower than that of ethane, propane and butane. One of the experiments reported daily boil-off losses of

about two per cent of the LNG tank volume. In the case of the trucks, improved tank installation and fuel-system design have resulted in boil-off losses being negligible for up to 2-3 days during vehicle stand-still. Another company indicated that for a stand-still period of approximately 10 hours LNG losses did not occur at all. During extended periods of vehicle down-time, the installed pressure-relief valves will cause significant LNG losses. Therefore, it is advantageous to realize the highest possible vehicle utilization per tank fill.

The presence of heavy hydrocarbons having a higher boiling point than methane, particularly ethane, propane and butane (amounting to as much as 5-11 per cent of LNG) can cause serious problems. If LNG is exclusively or predominantly withdrawn from the upper part of the fuel tank, then the engine burns essentially methane. After several refills heavy hydrocarbons can concentrate in the lower part of the fuel tank. If such heavy LNG compounds reach the engine cylinders, a detonation in the cylinder heads is likely to occur. Therefore, an LNG anti-enrichment system is recommended which withdraws LNG from the lower part of the tank and which uses the latent heat of vaporization of the LNG for the compensation of the heat conduction into the tank.

Compared to liquid engine fuels (e.g. gasoline, diesel oil and kerosene) LNG has a lower heating value per volume unit. Compared to a gross heating value of 153,726 BTU per gallon for gasoline, LNG has 103,381 BTU per gallon.

In dual-fuel systems, the utilization of compressed natural gas causes a reduction in power development compared with gasoline. The installation of a natural gas pressure storage vessel in addition to the gasoline tank reduces the pay load of the vehicle and the available storage area. This, in turn, is reflected in the specific fuel consumption of the respective vehicles.

In most cases, refuelling of dual-fuel systems has to take place at separate locations (retail pump outlets and natural gas distributors). This can result in additional fuel costs and can cause a more or less strong dependence on the availability of natural gas. In case of LNG utilization, the availability does represent an even more serious bottleneck. Problems of safety and reliability of LNG and natural gas utilization arise in the case of vehicle collisions.

In any case, the problems referred to will strongly prohibit a massive penetration of the gasoline and diesel oil markets by LNG and natural gas in the near future. However, it is relevant that LNG and compressed natural gas as automotive fuels are capable of materially reducing air pollution caused by automotive vehicle emissions. This inherent objective capability may very well stimulate the efforts of the petroleum and vehicle industry to reduce air pollution caused by engine emissions.

### OUTLOOK

LNG and compressed natural gas as engine fuels may find a certain market potential in industrial and commercial applications, where companies operate a relatively large fleet of vehicles which in turn have a high degree of vehicle utilization. Examples are: urban transportation, taxis, mining, road-construction and trucking operations.

Second and subsequent generations of supersonic airplanes may turn out to be another potential LNG market. If the problems of space utilization, safety aspects and vaporization losses (after take-off) can be solved satisfactorily LNG could substantially reduce pollution caused by airplanes. It has been stated that during take-off, a jet engine releases pollutants equivalent to those emitted by some 900 passenger cars. Yet, air pollution caused by air traffic has not been given adequate attention compared to pollution caused by automotive vehicles. Air traffic pollution cannot or only to a small extent be influenced by provincial governments. Provincial anti-air pollution policies and measures remain discriminatory and to some extent ineffective, so long as the federal government fails to reduce aircraft pollution.

Additional LNG utilization also may occur in gas turbine trains. The heat-sink capacity of LNG during vaporization can be used for air conditioning of passenger cars, for cooling of freight cars and for subcooling of the turbine combustion air. Finally, switching locomotives, waterborne carriers, agricultural machines, fork lift trucks, emergency power generators, fuel cells and storage facilities of gas utilities may become LNG consumers.

Anti-air pollution policies and measures are expected to benefit from the developments described. It would appear that governments would be well advised to cooperate closely with private citizens, corporations, and other governments in order to establish



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effective, realistic, coordinated and comprehensive anti-pollution policies and measures observing socio-economic benefit-cost aspects. To prevent pollution seems to be more

desirable than to abate pollution which has already occurred. In the field of air pollution, dispersion of pollutants at relatively high altitudes appears to offer only short-term relief,

as dispersion does not prevent air pollution but merely distributes pollutants more finely and over a larger geographical area than under undispersed conditions.



## Leading Indicators

Number 8

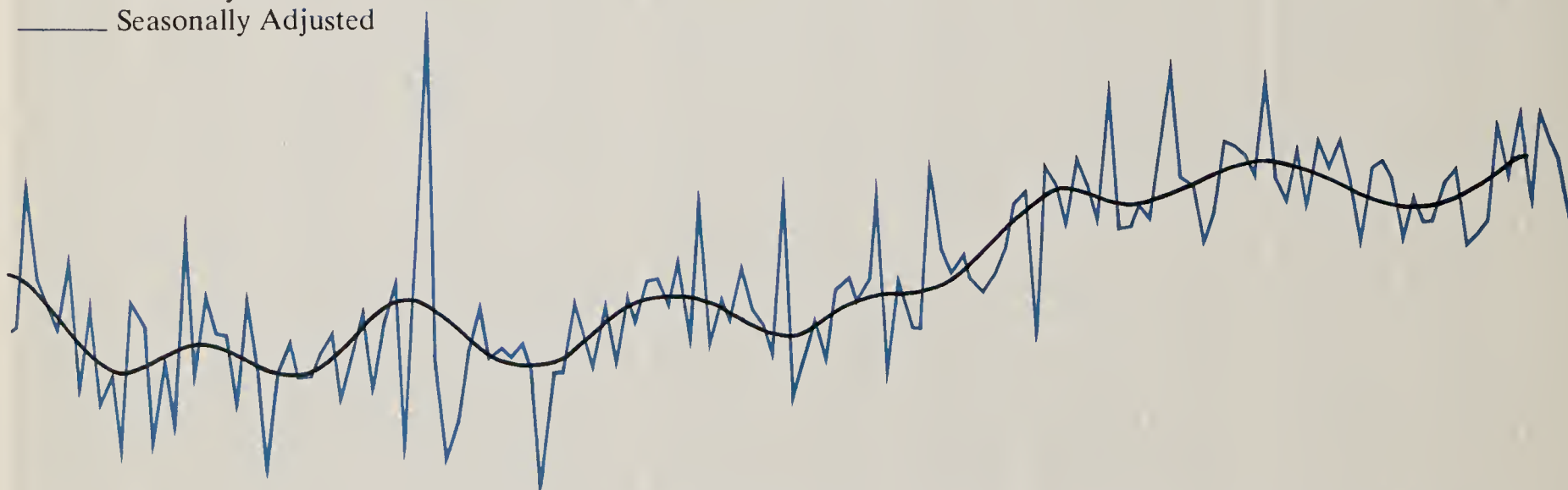


\$ Billion \$



\$ Million \$

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Thousand \$

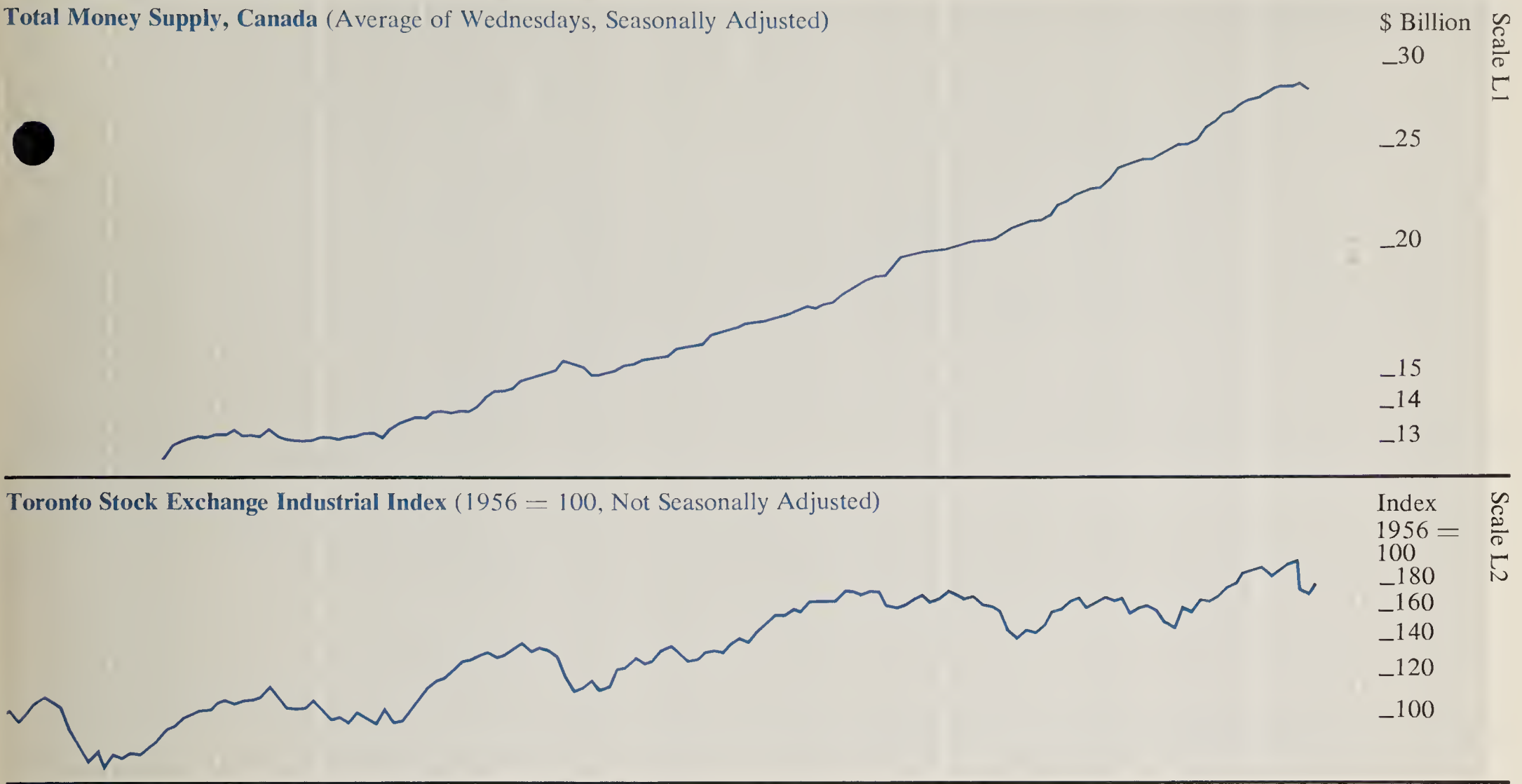
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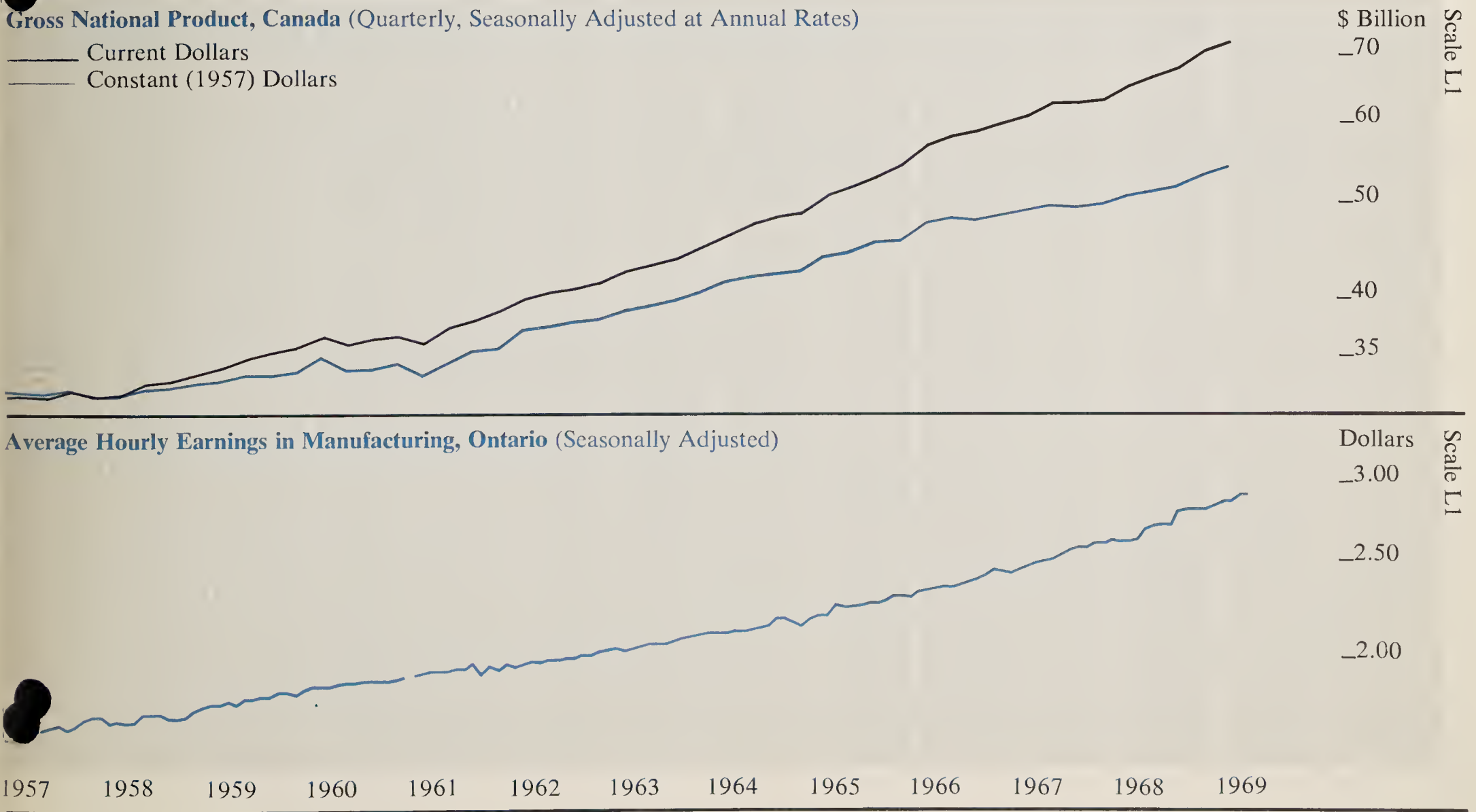
1957    1958    1959    1960    1961    1962    1963    1964    1965    1966    1967    1968    1969



# Leading Indicators



## Coincidental and Lagging Indicators





# Coincidental and Lagging Indicators

**Average Yield of 3-Month Treasury Bills, Canada** (Last Wednesday of the Month, Not Seasonally Adjusted)

Per Cent

Scale A



**Employment, Ontario** (Seasonally Adjusted)

Million

Scale L1



**Unemployment Rate, Ontario** (Inverted Scale, Seasonally Adjusted)

% of Labour Force

Scale A



**Index of Motor Vehicle Production, Canada** (1961 = 100, Seasonally Adjusted)

Index  
1961 =  
100

Scale L2



1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969



# Economic Indicators

Seasonally Adjusted

1968

1969

	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July
<b>Leading Indicators</b>														
Average Weekly Hours Worked in Manufacturing	40.3	40.3	40.2	40.6	40.6	40.7	40.1	40.5	40.4	40.5	40.1	40.2	40.2	
New Orders in Manufacturing Industries <sup>c</sup>	3,349	3,377	3,420	3,601	3,581	3,577	3,430	3,518	3,697	3,575	3,539	3,564	3,664	
Business, Industrial and Engineering Construction Contracts	129.3	97.7	101.8	107.8	154.4	125.0	155.0	111.9	157.9	140.6	120.9	110.5	97.7	
Urban Housing Starts (Annual Rate)	60,800	61,900	63,900	48,900	73,400	83,500	98,200	80,800	109,700	102,400	79,900	45,300	63,900	60,800
Money Supply <sup>c</sup>	25,501	25,868	26,293	26,632	26,768	27,124	27,400	27,669	27,927	28,251	28,331	28,336	28,638	28,324
T.S.E. Industrial Index <sup>u</sup>	166.61	165.93	169.02	176.37	179.61	187.29	188.93	192.47	185.20	190.58	195.31	197.23	177.34	168.65
Business Failures <sup>u</sup>	46	49	28	36	46	48	34	57	59	55	58	48	35	
Business Failures — Liabilities <sup>u</sup>	6.6	2.9	1.3	1.5	2.1	2.5	1.2	2.9	3.2	2.2	3.2	1.9	2.0	

## Coincidental and Lagging Indicators

Gross National Product <sup>c</sup> (Annual Rate)	\$ Million	66,328	67,824	70,152	71,884									
Average Hourly Earnings in Manufacturing	Dollars	2.67	2.71	2.76	2.78	2.78	2.79	2.81	2.84	2.84	2.88	2.87	2.89	
3-Month Treasury Bill Rate <sup>c,u</sup>	Per Cent	6.56	6.03	5.48	5.66	5.57	5.66	6.24	6.38	6.43	6.58	6.80	6.74	7.13
Cheques Cashed in Clearing Centres <sup>l</sup>	\$ Million	5,199	5,381	6,034	5,065	5,821	5,907	5,885	5,698	5,981	6,478	6,146	6,156	6,127
Retail Trade	\$ Million	804	840	835	850	851	862	853	879	886	862	866	866	875
Labour Force	000's	2,962	2,948	2,937	2,959	3,002	3,026	2,977	3,010	3,037	3,019	3,038	3,071	3,035
Employed	000's	2,844	2,825	2,837	2,858	2,890	2,923	2,879	2,928	2,947	2,940	2,948	2,958	2,926
Unemployed	000's	118	123	100	101	112	103	98	82	90	79	90	113	109
Unemployed as % of Labour Force	Per Cent	4.0	4.2	3.4	3.4	3.7	3.4	3.3	2.7	3.0	2.6	3.0	3.7	3.6
Wages and Salaries	\$ Million	1,141	1,142	1,157	1,186	1,198	1,223	1,224	1,239	1,256	1,263	1,270	1,288	1,295
Index of Industrial Employment	1961 = 100	124.0	124.1	125.4	126.7	127.8	128.6	129.3	130.5	131.2	131.5	131.4	131.4	131.0
														129.9

## Index of Industrial Production<sup>c</sup>

Total Manufacturing <sup>c</sup>	1961 = 100	160.1	159.5	159.3	161.6	163.7	165.7	165.8	168.0	171.3	167.7	167.0	167.1	166.8
Non-Durables <sup>c</sup>		159.7	157.8	158.0	161.3	163.7	165.9	165.7	164.2	171.3	167.3	168.6	169.1	169.1
Durables <sup>c</sup>		146.1	142.1	139.8	142.8	144.6	148.0	149.8	147.6	153.6	150.2	150.6	151.1	151.1
Mining <sup>c</sup>		176.2	177.0	180.2	183.9	187.0	187.8	185.0	184.5	192.8	188.1	190.7	191.0	191.2
Electric Power and Gas Utilities <sup>c</sup>		154.6	156.1	154.3	152.9	154.0	155.1	154.4	159.7	162.1	157.4	145.5	142.5	139.0
Primary Energy Demand (Annual Rate)		172.1	179.9	179.0	177.5	178.5	179.7	186.7	189.5	184.3	186.2	186.6	187.1	189.0
Exports (including re-exports) <sup>c</sup>	BKWH	53.83	55.92	55.69	54.83	57.09	57.89	59.81	59.83	58.45	59.49	58.54	59.12	60.28
Imports <sup>c</sup>	\$ Million	1,115.9	1,063.5	1,103.5	1,115.0	1,176.4	1,203.2	1,201.8	1,214.9	1,266.5	1,194.2	1,233.6	1,211.9	1,139.2
	\$ Million	962.7	927.3	963.0	1,092.1	1,127.2	1,084.3	1,106.0	1,105.6	1,180.7	1,154.1	1,177.3	1,215.2	1,123.2

## Unclassified Indicators

Foreign Exchange Reserves <sup>c,u</sup>	U.S. \$ Million	2,574	2,515	2,590	2,534	2,525	2,672	2,827	2,864	2,779	2,782	2,760	2,623	2,565
Industrial Materials Price Index <sup>c,u</sup>	1935-39 = 100	253.0	253.4	254.2	253.4	256.8	257.1	258.9	261.4	263.5	264.1	271.8	270.6	270.5
Consumer Price Index <sup>c,u</sup>	1961 = 100	119.7	120.4	120.7	121.1	121.4	121.9	122.3	122.6	123.2	124.6	124.9	125.9	126.4

<sup>c</sup>Statistics for Canada.

<sup>u</sup>Not seasonally adjusted.

<sup>l</sup>Ontario less Toronto.





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# Ontario Economic Review

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Nov/Dec 1969  
Volume 7, Number 6

Department of Treasury and Economics

Hon. Charles S. MacNaughton, Treasurer of Ontario  
and Minister of Economics

H. Ian Macdonald, Deputy Minister



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NO. 6



# Ontario Economic Review

November/December 1969

Volume 7, Number 6

## The Ontario Economy

## An Analysis of Population Growth Trends in Ontario

R. Kogler, Economist,  
Department of Treasury and Economics

## Selected Economic Indicators

A publication of the  
Department of Treasury  
and Economics  
Government of Ontario

Hon. Charles S. MacNaughton  
*Treasurer of Ontario and  
Minister of Economics*

H. Ian Macdonald  
*Deputy Minister*

The *Ontario Economic Review* is prepared and edited bimonthly in the Economic Analysis Branch of the Economic and Statistical Services Division, Department of Treasury and Economics. The review presents articles of interest as well as current information on economic activity in Ontario. Signed articles reflect the opinions of their authors and do not necessarily represent the views of the Department.

Subscriptions can be obtained free of charge by writing the Editor, *Ontario Economic Review*, Department of Treasury and Economics, Frost Building, Queen's Park, Toronto 181, Ontario.

### About the Review

The feature article for the November/December edition of the *Ontario Economic Review* presents an analysis of population growth trends in the Economic Regions and Counties of Ontario since the turn of the century in general and from 1921 to 1966 in particular.

Population growth has always been a matter of great interest in Ontario, as elsewhere, since the demand for social capital and private capital investment is dependent to a large extent on the size of the population. In the past, investment plans have usually been based on the assumption that current trends would continue. However to anticipate any possible change in these trends it becomes desirable to examine each of the individual factors affecting population. In this article an attempt has been made to point out some of the changing demographic trends and their notable effects on the composition of Ontario's population.

This article, an extract from a more detailed study, was prepared by Mr. R. Kogler, Economist with the Economic Analysis Branch, Economic and Statistical Services Division, Department of Treasury and Economics.

### Indicator Charts, Pages 18-20

Fluctuations in aggregate economic activity – commonly used to define business cycles – do not necessarily correspond with fluctuations in the individual activities which make up the aggregate. Instead different indicators of economic activity may vary with respect to both their rates of growth and the timing of their peaks and troughs: some may grow more rapidly than others, some change direction sooner.

Those activities which tend to assume a direction in advance of the aggregate – because they relate to future rather than present production – are referred to as leading indicators, and are widely used to anticipate the short-run future course of the overall economy. The charts on pages 18-20 in the *Ontario Economic Review* present a number of these leading indicators, as well as several which are coincidental to or lag behind the aggregate, to provide for the reader an opportunity to make such an evaluation.

While comparisons of the timing and direction of general changes in the various indicators can readily be made, great care must be exercised in making such a comparison of the amplitude of fluctuations. Of the three vertical scales used – 'A' (arithmetic) and 'L1' and 'L2' (logarithmic scales with one and two cycles respectively over a given vertical distance) – only the logarithmic scales can be used to compare relative changes in different indicators. *And this applies only when all series being compared are on the same logarithmic scale.* In such a situation all parallel lines represent equal rates of growth, the exact rate of growth being determined by the slope of the line.



According to most key indicators the Ontario economy is quite buoyant and growing at a faster rate than the national average. Average weekly wages and salaries in manufacturing rose 8.1 per cent to \$128.80 in the 12 months ending last July. In Canada, the average rose 7.9 per cent to \$122.25. Retail trade in the first eight months of 1969 is up 8.6 per cent in Ontario and up 6.4 per cent in Canada as a whole. Capital investment in Ontario in 1969 is expected to increase by 16.3 per cent over last year while an increase of 10.7 per cent is forecast for all of Canada. Unemployment in the province fell to 3.1 per cent in September, down from 3.4 per cent one year earlier. This compares very favourably with rates of 5.0 per cent for Canada as a whole in September 1969 and 4.8 per cent in September 1968.

The one notable exception to Ontario's pace-setting performance has been housing. Urban housing starts in Ontario are up only 9.0 per cent in the first nine months of the year, compared to a national increase of 17.2 per cent.

The most prominent feature of the Provincial and Canadian economy in the second half, however, continues to be increasing wages and prices. The Canadian Consumer Price Index rose once again during the month of October, to a level 4.4 per cent above that of October 1968. The housing, clothing, health and recreation components contributed significantly to this latest increase. This level of year-to-year price increase is down slightly from the more-than-five per cent annual increases recorded in June, July and August of this year but is still far above acceptable levels.

In an attempt to combat inflation and inflationary expectations the federal government introduced tight monetary policy measures early in the spring of this year. Since then, there has been virtually no increase in the money supply and very high interest rates combined with reduced government spending and a moderate degree of fiscal restraint. However, due to the inevitable lags between policy actions and ultimate results there is only limited evidence of a slowing rate of inflation at this time. Although economic policies appear to be working as intended and an adjustment has begun to take place in the Canadian economy, measurement is difficult because of the extensive price-wage strife.

Another significant factor influencing the success of anti-inflationary policies is the

effectiveness of similarly initiated and implemented policies in other countries, particularly the United States. Policies of economic restraint were introduced in the United States much earlier than in Canada and the effects of these policies are now becoming apparent. In September U.S. nationwide unemployment rose, a very slim gain was recorded for personal income and for the second month in a row the index of industrial production decreased. Moreover, preliminary figures on third quarter gross national product confirm weakness in housing activity, sluggishness in consumer spending and an essentially sideways trend in federal government expenditures. With policies of restraint becoming effective in the U.S., some moderation in the rise in U.S. prices is expected by early 1970. Thus, the inflationary impetus for the expansion of Canadian exports to the U.S. will begin to subside. Since the Bank of Canada will likely continue its restrictive monetary policy in the remaining months of 1969 the Canadian economy should continue to operate in an atmosphere of slow monetary growth and high interest rates as it approaches 1970. Moreover, Canadian business indicators suggest that the peak of the recent expansion was recorded in the fourth quarter of 1968, and that a markedly slower rate of growth of real gross national product occurred during the first half of 1969. If restrictive fiscal and monetary policies are maintained as expected, slower growth of production and employment and a reduction in the acceleration of labour incomes may be expected to take place throughout the remainder of 1969 and into 1970.

## FEDERAL PROPOSALS FOR TAX REFORM

On Friday, November 4, Finance Minister E. J. Benson tabled the proposals of the long-awaited White Paper on Tax Reform. In this White Paper the federal government places before Parliament, the Canadian people and the provincial governments the most comprehensive tax reform proposals in more than twenty years.

For almost a decade the strengths and weaknesses of the federal income tax system have been closely studied and vigorously debated. Widespread recognition of inequities led to the 1962 appointment of the Royal Commission on Taxation which published its controversial report early in 1967. After lengthy study of this report and the comment upon it the federal government has

come to the following conclusions and recommendations based upon these findings:

Canadians in the lower income tax brackets face a heavy total tax burden. In recent years sales taxes and property taxes have been increased substantially. Where changes in the income tax can provide relief, it must be given to those with lower incomes. The government proposes increases in the exemptions to ease the burden on these individuals and families. Important forms of income and benefits escape taxation. The government proposes to bring them into taxable income. In particular, a tax on capital gains is proposed.

Tax can be avoided under the present law by clever devices. The reform must close loopholes now available to those with the wealth and expert advice to use them.

Wage earners are unable to deduct many legitimate expenses from taxable income. New deductions would be introduced to benefit employees and working mothers.

Corporations are taxed in ways that are open to abuse and that fail to recognize their differing relationships with shareholders. The government proposes changes under a new system that would be fairer to small shareholders and that would stimulate Canadian ownership of Canadian business.

The mineral industries enjoy special tax benefits that have existed for many years but that are unnecessarily costly and inefficient. Assistance to mineral exploration and development must do its intended job in a more direct way that is less costly in terms of revenue.

## The Program in Brief

*The following excerpts from the text of the White Paper summarize the federal government's proposals for tax reform:*

The form of the personal income tax would be streamlined, greatly simplifying the individual's task in calculating his tax. The old age security tax and the social development tax would be merged into the graduated tax, and several other adjustments and surtaxes of recent years would be eliminated. The new graduated rates would determine the federal tax, and there would be no general abatement for provincial taxes. The provinces would be invited to apply their tax as a percentage of the federal tax, and on that basis the federal government would continue to collect this



revenue for the provinces without cost to them. The Old Age Security Fund would be credited with the equivalent yield of the present old age security tax.

#### *Higher Exemptions*

To remove or reduce taxes on lower-income taxpayers the government proposes to increase the basic personal exemption for a single person to \$1,400 from \$1,000 and for a married couple to \$2,800 from \$2,000. The basic standard deduction available in lieu of deductions for charitable donations and medical expenses would remain at \$100. Consequently those taxable as single persons with income under \$1,500 would have no tax to pay and those taxable as married would have no tax to pay if their incomes were under \$2,900.

This change in exemptions alone would take about 750,000 Canadians off the income tax rolls. Taken together with the other changes proposed, it would reduce taxes on almost 3,000,000 more at the low end of the taxable scale. The benefits which larger exemptions would otherwise give to those with higher incomes would be offset by higher rates of tax.

The new rates of tax would replace the present graduated rates, the provincial abatements, current surtaxes, the old age security tax and the social development tax. The rates would be revised to take into account the increase in exemptions, the taxation of capital gains, and the various other changes, while still bringing in the same amount of total federal revenue and serving as a base for the same total of provincial revenues. When the new employment expense allowance is taken into account (see below), the amounts of tax under the new rates would be less than the present tax on single persons up to an income of about \$3,400 per year, and on married persons up to an income of about \$9,100. For incomes above these levels the tax would be higher than under the current law, particularly when changes in the definition of income are taken into account.

#### *Capital Gains as Income*

The government has decided to include capital gains and a number of other benefits in income subject to tax. Reviews of this subject by the royal commission and the government led to the conclusion that this is essential in order to be fair between those receiving such gains and others deriving their incomes from other sources. Moreover, the taxation of

gains is essential to block loopholes effectively. The economic effects of taxing gains have been appraised and are considered unlikely to interfere significantly with incentives to save and invest in Canada.

Those who make substantial capital gains in the stock market or in real estate increase their ability to spend money just as those who earn wages or derive an income from carrying on business. Interest payments are already fully taxed. Capital gains are now widely sought as an objective in investment. Indeed the freedom of capital gains from tax is distorting the investment of savings under present circumstances.

In general, we propose to include capital gains fully in income for most classes of assets whenever they are realized by the sale of such assets, and to allow realized capital losses to be deducted from income. Certain exemptions would be permitted for taxpayers' homes and for articles of personal property. Special rules would apply to the marketable shares of widely-held Canadian companies. On such shares accrued gains would be taxed every five years and accrued losses allowed as deductions at such time. Only half the gain or loss on such shares would be taken into taxable income in recognition that the corporation income tax paid by such companies is only partially credited for personal income tax.

Once capital gains are included in taxable income, the portion of the total income of the wealthy that is brought to tax would be dramatically increased. The tax system would be significantly more progressive even without the ostentatiously high rates now in use. It is proposed that the marginal rates in excess of 50 per cent be reduced to the neighborhood of 50 per cent in four instalments as the capital gains subject to tax increase. Estimates based on 1969 incomes indicate that by the fifth year of the new system the inclusion of capital gains in taxable income should add about \$345 million to personal income taxes, while the reduction of the top rates to 50 per cent on other income should cost about \$40 million.

#### *New Deductions*

The government has examined the deductions individuals may claim for various costs they incur, as well as differences in treatment between taxpayers who are employed and those who carry on a business or profession. The royal commission said many employees have been over-taxed because they have been

denied the deduction of almost all expenses incurred in earning wages and salaries. But millions of taxpayers are involved, and a very wide range of expenses could be related to earning their employment income. These taxpayers do not keep detailed records. The government has found no practical way to permit employees to deduct actual costs as do those carrying on a profession or other business. We propose to provide employees with a general deduction to cover expenses, in addition to certain specified deductions. The amount would be 3 per cent of employment income, up to a total of \$150 a year. This could benefit more than 6,500,000 persons, the great majority of them earning less than \$10,000 a year.

Costs of looking after young children when both parents are working, or when there is only one parent and that parent is working, would be allowed as a deduction subject to certain conditions. This new plan is intended primarily to benefit mothers who need to work to support their families, and would be in addition to the normal exemption for children. The maximum expenses allowed would be the lower of \$500 per child under age 14 or \$2,000 per family.

#### *Other Items in Income*

By including more receipts in income the government proposes to make the definition of income more comprehensive and to distribute the tax load more fairly. Some additional revenue would arise from this change, but it would be offset by additional deductions to be allowed from income.

Various fringe benefits received by employees or by the owners of businesses would be included in income for the first time. For example, an employee or owner of a business with a business-owned car available for his personal use would be required to include a minimum amount in his taxable income unless he pays the business at least that amount for the use of the car. There are other fringe benefits whose value cannot readily be measured in the hands of the recipient; for example, the use of hunting and fishing lodges, yachts and airplanes, the payment of social and recreational club dues, and the entertainment costs that are included in expense accounts. These costs would no longer be deductible to the employer.

The government has decided that it would make the tax system fairer if the treatment of unemployment insurance were changed to permit workers to deduct their contributions



to the fund and to require them to pay tax on benefits received. Many of the benefits are received by employees with average or higher than average incomes who are unemployed for relatively short periods, and whose annual incomes equal or exceed the annual earnings of others. The higher their incomes the greater the tax benefit. It is fairer to tax them on this part of their income, as long as we permit all employees to deduct their contributions. Anyone on unemployment insurance benefits for most of the year is likely to pay little or no tax.

It is also proposed, in fairness to other taxpayers, that fellowships, research grants, scholarships and bursaries be treated as taxable income but subject to the deduction for tuition fees and costs incurred for research. Undergraduates would seldom need to pay tax because few scholarships and bursaries are larger than the new personal exemptions plus the fees that may be deducted from students' incomes. But if students have other income, there is no reason why they should not be taxed like other Canadians.

For many years, members of the armed services have been taxed under special regulations which are aimed at simplicity of administration but confer special benefits. The regulations are no longer necessary on administrative grounds and would be dropped. Members of the Canadian armed forces would then be taxed under the normal terms of the Income Tax Act.

#### *A New System for Corporations*

The government proposes to alter the method of taxing corporations by establishing a single rate of corporation tax and providing a system of credits to shareholders for corporate taxes paid. An important distinction would be made between private, closely-held corporations and public, widely-held corporations.

For closely-held corporations, which are usually smaller businesses managed by the shareholders, the tax should be related as closely as possible to rates paid by individual shareholders. There is usually a close identity between the shareholders and the corporation. These corporations usually compete in markets with unincorporated businesses subject only to personal income tax. Under the proposed plan the federal income tax paid by such corporations would be treated as a prepayment of the personal income tax on behalf of individual resident shareholders.

Under certain conditions the corporation could elect to be taxed as a partnership of its shareholders. In other cases the shareholders would pay tax on a sum that includes their dividends plus a related amount of corporate tax already paid; and they would then claim credit for the corporate tax paid, and qualify for a refund if their own rates are lower than the corporate rate.

The government believes that this is a fairer way of taxing the income of Canadians which flows through corporations than the existing system with its lower rate of corporate tax on \$35,000 of profits annually. It proposes to remove this lower rate gradually over a period of five years. Thereafter, the benefits of low rates of tax would go to shareholders with small incomes rather than to corporations with small incomes.

Widely-held corporations are usually larger businesses where the link between shareholders and management is tenuous. Such corporations are themselves important economic entities. Their products or services are usually sold in competition with other large corporations, where prices yield an adequate return after paying corporate tax. One half the corporate income tax paid by such corporations would be regarded as a prepayment of individual tax for individual Canadian resident shareholders, but the other half would not be linked in this way. Shareholders receiving dividends from profits taxed under the new plan would be liable for tax on the dividend plus an amount of "creditable tax" equal to half the dividend and would be given credit for that amount of tax. This system would be roughly equivalent to the present dividend tax credit for taxpayers in the 50-per-cent tax bracket and would be more favourable for those in lower tax brackets. It would thus provide a powerful incentive for investment by Canadians in Canadian corporations.

This new system would:

- offer a substantial inducement for Canadians to invest in Canadian business;
- when combined with the proposed method of taxing capital gains, make possible a fair and fully effective but economically tolerable tax system;
- prevent surplus stripping and most other tax avoidance devices;
- be fairer in its treatment of lower-income shareholders than the present

dividend tax credit and preferred low rate of tax on the first \$35,000 of corporate income.

#### *The Mineral Industries*

For many years special rules have been applied to determine the income from mining and from the production of oil and natural gas. These have been reviewed by the government in the light of the criticisms, proposals, briefs and discussions of the last several years.

The government has decided that some special rules should still apply in determining the income derived from the mineral industries, in order to encourage exploration for and development of mineral deposits. These inducements are intended to encourage the establishment and growth of highly productive industry in areas of Canada outside those where rapid urban and industrial growth are already occurring. However, the special rules should be revised substantially to ensure that really profitable projects pay a fair share of the national revenues, as other industries do, and that the inducements offered are efficient.

Two main changes are proposed. The first would replace the three-year tax exemption for new mines with a special rule permitting capital costs of fixed assets purchased for the development and operation of a new mine to be charged off against income from that mine as quickly as desired. This change would take effect in 1974 at the expiration of the period for which the government in 1967 gave assurances that the three-year exemption would continue. The new rule would ensure that in the high-risk business of mining, taxes would not be paid until investments in new projects are recovered, but it would do so on a more economical basis than the present exemption.

The second change concerns depletion allowances. The existing maximums would continue to apply — generally no more than one-third of production profits — but a taxpayer could run out of depletion allowances unless he continues to explore for, and/or develop, Canadian minerals. Every \$3 of qualifying expenditures made after this White Paper is published would "earn" the taxpayer the right to \$1 of depletion allowances if and when his production profits permit. Depletion allowances on new properties would have to be "earned depletion" immediately: "unearned" allowances would be continued for five years on existing properties as a transitional measure.



# An Analysis of Population Growth Trends in Ontario

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## POPULATION GROWTH

At the time of Confederation Ontario's population amounted to 1,525,000. A hundred years later it had grown to 7,149,000, an increase of 368.8 per cent or an average annual growth rate of 1.56 per cent. However, this growth was by no means uniform. Between 1867 and 1881 the rate of growth amounted to 1.68 per cent per annum; it declined to 0.62 per cent between 1881 and 1901; increased to 1.52 per cent between 1901 and 1931 and fell to 0.99 per cent from 1931 to 1941. Since 1941 the population of Ontario has grown at an annual rate of 2.46 per cent which is high by any standard. The high rate of growth between 1867 and 1881, 1901 and 1931 and since 1941 can be ascribed primarily to large immigration from abroad, whereas the low rate of growth during the period 1881-1901 can be attributed to outmigration from Ontario to the western provinces and the decrease during the 1931-1941 period was of course due to the depression.

Although the average annual growth rate for the period 1941-1968 was 2.46 per cent, the pattern was not uniform. It fluctuated between 0.8 per cent, the lowest point in 1943, and a very high rate of 4.3 per cent in 1957. However, since 1946 the rate has been generally over the 2.0 per cent mark, twice surpassing the 4.0 per cent level: in 1952 (the Korean war period) and in 1957 (during political unrest in central Europe, especially in Hungary).

Generally speaking, since 1941 the population of Ontario has grown at a faster rate than that of the rest of Canada, whose growth pattern varied between 0.7 per cent and 2.8 per cent per annum. This phenomenon can be explained by the fact that since the end of World War II, Ontario, apart from high birth rates, has consistently attracted more than half of the total immigration to Canada.

During the period 1901-1967 natural increase contributed 63.4 per cent and migration 36.6 per cent to the total population growth in Ontario. However, comparing the 1901-1941 and 1951-1968 periods it can be seen that in the earlier, pre-war period natural increase played a greater part in the overall population growth in Ontario, contributing 70.5 per cent whereas migration added only 29.5 per cent. During the post-war period, 1951-1968, the importance of natural increase as a source of population growth diminished, contributing only 58.7

per cent to the overall population increase, whereas the importance of migration has grown — its share of the increase during the period rising to 41.3 per cent.

Although during the period 1901-1968 natural increase was a principal source of population growth, during the years 1966, 1967 and 1968 the migration component displaced natural increase as the main source of population growth. The proportion of natural increase in these three years was only 43.6 per cent and that of the migration component 56.4 per cent. The natural increase component of population growth in Ontario has been steadily declining since 1960 (when it reached the apex), attaining in 1968 the 1951 level which was 33.3 per cent below that of 1960. If the current fertility trends continue migration will become the principal source of future population growth in Ontario, provided of course that the present high levels of immigration into Canada are maintained. If, however, immigration declines and birth rates do not improve, the rate of growth of Ontario's population will revert to the level of the 1930's.

## Age Structure

No study of population growth can avoid some references to the age structure and changes therein since its economic and social implications are quite far-reaching. For example, age structure affects the composition of labour force, the size of the school population and birth, death and marriage rates.

Age structure is directly influenced by three demographic variables: fertility, mortality and migration. These variables are not entirely independent since any change in one of these influences the other two.

Table 1 in the appendix shows the age distribution of Ontario's population by ten-year age groups for census years beginning with 1901. In order to facilitate discussion of this table the population statistics presented may be divided into three main age groups, namely:

- infants and adolescents: 0-19,
- adults: 20-64
- the aged: 65 and over.

The main characteristics of these respective groups are:

- a) From the demographic point of view, the 0-19 age group plays only a relatively small part in the reproductive process, and in the economic sense is to a large degree non-productive.

- b) The 20-64 age group is the most active both in the demographic and economic sense. At the younger end of the scale, this group is characterized by high age-specific fertility rates, high marriage rates, low mortality rates and high migration rates. From the economic point of view it is the most productive age group which to a large degree supports the remaining two age groups.
- c) From the demographic point of view the 65 and over age group is characterized by high mortality rates and low migration rates. In the economic sense they are largely non-productive.

Scrutiny of Table 1 shows a marked decline in the proportion of the population under 20 years of age between 1901-1941 despite the fact that in absolute numbers this age group increased by 348,400 (or 38.1 per cent). This proportional decline was caused partly by falling fertility rates and partly by high migration rates. Since the propensity to migrate is strongest among young adults, high in-migration rates will of necessity augment the 20-64 age group.

The proportion of the youngest age group (0-19) has increased continuously between 1941-1966 — mainly as a result of the "baby boom" during the 1950's — reaching the 41.9 per cent level in 1966. However it did not surpass the high mark of 41.9 per cent of the population in 1901.

The middle age group (20-64) increased from 52.6 per cent in 1901 to 58.5 per cent of the population in 1941 and since then has declined steadily to 1966 when it reached the 51.5 per cent level.

The proportion of the senior age group increased from 5.5 per cent in 1901 to 8.7 per cent in 1951. It declined slightly in 1956 to 8.4 per cent and in 1961 to 8.1 per cent but started to rise in 1966 when it reached 8.2 per cent of the total population.

The increase in the ratio of the 65-and-over age group between 1901 and 1951 was caused mainly by the falling age-specific death rates as a result of vastly improved medical treatment. The slight decline in the proportion of this age group since 1951 is due to a sharp increase in the proportion of the youngest age group (0-19). Numerically the 64-and-over age group increased from 120,000 in 1901, to 400,400 in 1951 and to 567,700 in 1966.

It is fairly obvious that when the proportion of the active population becomes smaller



the burden of "dependency" increases. This is the result of two phenomena: (1) cohorts born in the early years of the century are progressively reaching the age of 65 and are entering the dependent "aged" group, while (2) at the younger end of the scale the large number of cohorts born in the 1950's are still too young to enter the active adult life. The dependency ratio will start to fall in the seventies because of the fewer births in the sixties and because the large number of post-war-born will begin their active economic life. This trend will also be supported by the large-scale in-migration of the sixties which has augmented the proportion of the adult population.

Table 2 presents the "Ratio of Working-Age Population" by economic regions and counties. These figures, when subtracted from 100.0 per cent give the dependency ratio. This ratio was lowest in 1966 in the Central Ontario Region (37.4 per cent) followed by the Niagara Region (39.6 per cent). It was highest for the Georgian Bay Region at 43.2 per cent. The overall Ontario ratio was 39.8 per cent.

In 1931 the Ontario ratio was 34.8 per cent whereas the Central Ontario Region also had the lowest ratio of 30.8 per cent followed by the Niagara Region at 33.6 per cent. Northeastern Ontario had the highest dependency ratio in 1931 at 38.1 per cent.

Among the counties in 1966, York had the lowest dependency ratio of 36.6 per cent and the District of Manitoulin the highest with 47.2 per cent.

The index of aging of Ontario's population represents the 65-and-over age group as a percentage of the 0-14 age group. The index stood at 24.2 in 1931, rose to 32.6 in 1941, before declining to 25.2 in 1961. In 1966, it rose slightly and this trend is likely to continue in view of the declining birth rates.

The historical trend in this index for all Ontario has not always coincided with the historical trends for the various economic regions. For example, the upturn of this index in 1966 for the Province was not seen for the economic regions of Central and Mid-Western Ontario. In these regions the indexes continued to maintain a downward trend. On the other hand, in the Lake St. Clair Region, the upturn trend came earlier, in 1961, unlike most other regions where it first occurred in 1966.

Regarding the extent of variation in the indexes among economic regions, Northeast-

ern Ontario has had a very low index of aging as compared to any other economic region. This can be attributed to three factors. First, Northeastern Ontario has had a higher-than-average fertility rate in recent years. This has raised the percentage of population in the 0-14 age group. Secondly, Northeastern Ontario has had a higher-than-average death rate in the 65-and-over age group, lowering the percentage of population in this age group. Thirdly, this region has had a net in-migration of persons in the 0-14 age group while there has been a net out-migration in the 50-and-over age groups.

The median<sup>1</sup> ages of Ontario's and Canada's populations during the 1901-1966 period can be seen in the accompanying table. The median age of a population indicates generally how old or young the population is. For example, a median age below 30 reflects a relatively young and dynamic population. The median age of Ontario's and Canada's population during this period reached its highest point in 1951. Ontario has always had a higher median age than that of Canada as a whole, probably due to the province's lower birth rate and higher immigration rate.

When median ages of males and females are considered separately it is found that in Ontario the males had a higher median age until 1941. Since then the female median age has risen above that for males. This has been largely the result of comparatively higher rates of mortality decline for females than for males. However, for Canada, this reversal in the ratio between the median ages of males and females is observable only from 1956 onwards. Moreover, the gap between male and female median ages has been widening

since 1956. In view of the declining birth rates it is not certain how long this decline in median age for Ontario will continue.

### Sex Composition

The sex composition of any population is the second most important biological factor affecting its demographic structure. The relative proportions of males and females in a given country at a certain period of time are the result of past fertility, mortality and migration. The simplest measure of this variable is the sex ratio, defined as the number of males per 1,000 females (sometimes calculated on the basis of 100 females).

In most populations there is always some imbalance of sexes because of:

- A preponderance of males or females, usually the former, at birth. The sex ratio at birth in Canada and Ontario averaged 1,057 males to 1,000 females during the period 1921-1966 (within the range of 1,041-1,075 for Ontario, and 1,046-1,081 for Canada during the same period).
- A sex-selective death rate. Women in Canada live on the average longer than men. In 1966 the average age at death in Ontario was 63.1 among men and 67.7 among women; in Canada 62.0 among men and 65.9 among women.
- A sex-selective migration.

These factors shape the sex composition of Ontario's population. When the birth rate is high, the sex ratio adjusts in favour of males. This is reversed later as a result of the lower mortality rates for females. This has been so in spite of the preponderance of male immigrants over female immigrants throughout the 20th century with the exception of the

**Median Age of Population by Sex, for Ontario and Canada, 1901-1966**

Year	Ontario			Canada less Ontario			Canada		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1901	24.1	24.1	24.1	22.3	21.2	21.9	22.9	22.4	22.7
1911	25.9	25.6	25.8	23.9	21.4	22.8	24.5	22.9	23.8
1921	27.0	26.6	26.8	23.6	21.5	22.5	24.8	23.2	23.9
1931	27.8	27.7	27.8	24.4	22.5	23.5	25.5	24.0	24.7
1941	29.9	29.8	29.9	26.4	25.1	25.7	27.5	26.6	27.0
1951	29.9	30.3	30.1	26.7	26.3	26.5	27.8	27.6	27.7
1956	29.2	29.8	29.5	26.0	25.9	26.0	27.2	27.3	27.2
1961	27.9	28.8	28.4	25.0	25.3	25.2	26.1	26.6	26.3
1966	26.5	27.9	27.2	24.3	24.9	24.6	25.0	26.0	25.5

<sup>1</sup>the age which divides a population into two equal parts, half above the median age and half below it. (The other measure of central tendency, the mean (average) could also

be calculated by summing all the ages of persons and dividing by the number of persons in the distribution. The mean is more difficult to calculate, and is influenced by extreme values.)



period 1961-1966 when females formed 51 per cent of total immigration.

Since 1957 there has been a continuous decline in the sex ratio. This is the result of lower birth rates and higher rates of mortality decline for women. Analysis of historical data on mortality rates during the period 1921-1966 reveals that when mortality rates declined, female mortality rates, especially in the higher age brackets, declined more sharply than male mortality rates. During 1921-1966 the mortality rates for males in the 45-49 age group fell by only 21 per cent as compared to a 55 per cent decline for females. In the 55-59 age group, the death rate for males changed very little, while the death rate for females declined by 44 per cent. In the next higher age group, the female death rate decreased by 41 per cent, but the male death rate remained stable. In the 70-and-over age group also females registered a higher rate of mortality decline than males. This significant differential in the decline of mortality rates between males and females explains the decreasing sex ratio for males in spite of a favourable position at birth.

## SPATIAL DISTRIBUTION AND URBANIZATION

Spatial distribution is a continuous process involving shifts in the population. In Ontario, as in other areas population movement is influenced to a considerable degree by the type and scale of economic activities being carried out in specific regions of the province. Agricultural populations are generally considered to be more evenly distributed geographically than populations with more diverse economic activities. On the other hand, manufacturing and service industries, with their demands for large pools of readily available labour, stimulate dense population concentrations. However, recent trends towards greater farm mechanization (which in turn necessitate formation of commercially viable farm units) will release more people from agriculture in future. Some estimates predict that the farm labour force may be cut by as much as 50 per cent in the not-too-distant future. The surplus rural population will then be drawn to the ever-growing urban centres. This should not represent an extremely large influx since in 1966 only 6.9 per cent of the total Ontario population were engaged in farming.

Technological advances in mining and forestry have also reduced the demand for

labour. Thus, the expansion of mining and forest operations will exert less influence upon population distribution in the future than it did in the past.

The distribution of population throughout Ontario is highly uneven. In the District of Kenora one person has approximately three square miles of living space at his disposal, whereas in the County of York, according to the latest census, 2,288 people live on one square mile. The northern part of Ontario, north of Lake Nipissing, which comprises roughly 300,000 square miles, or 90 per cent of the total area of Ontario, has only 10 per cent of Ontario's population. South of Lake Nipissing, 90 per cent of population lives on the remaining 10 per cent of the land area. In numerical terms the vast area north of Lake Nipissing accommodates as many people as the Township of East York!

South of Lake Nipissing, 6,221,200 Ontarians are living on 45,700 square miles, which gives us a density of 136 persons per square mile. However, even this density is relatively low by international standards. The area of Southern Ontario is slightly less than that of England (50,371 square miles) — but England has 47,000,000 people or a population density of 933 per square mile.

In addition, spatial distribution in the southern portion of Ontario is highly uneven. One third of Ontario's population is concentrated in the vicinity of Metropolitan Toronto. Examining the situation more closely it can be seen that Ontarians tend to cluster in and around large cities. The seven Census Metropolitan Areas: Hamilton, Kitchener, London, Ottawa, Sudbury, Toronto and Windsor — had in 1966 a combined population of 3,720,452 or 53.5 per cent of the total population of the province. Fifteen years earlier, the same seven urban areas had only 2,192,263 people or 47.7 per cent of the total. This gives us an average metropolitan growth rate of 3.6 per cent in comparison with the total provincial population growth rate of 2.8 per cent per annum, or an absolute increase for the province of 2,363,328 people in the period 1951-1966. The net gain in population of the seven Census Metropolitan Areas between 1951-1966 was 1,528,200 or 64.7 per cent of the total population growth of Ontario during that period. During the same period, the population living outside the seven urban centres grew in absolute terms by 835,100. This represents an increase of only 35.3

per cent and an average annual growth rate of only 2.0 per cent. In other words, the growth rate of the population living in the seven metropolitan areas was almost twice that of the rest of the provincial population.

In 1901 there was only one city (Toronto) with a population more than 100,000 and it contained 9.3 per cent of the total provincial population. In 1966 there were nine such centres containing 56.5 per cent of the province's population.

The ratio of urban population living in centres of 5,000 and over in 1966 was 75.5 per cent, whereas in 1901 it was only 26.6 per cent and in 1931, 49.5 per cent.

From this evidence one may conclude that the process of urbanization in Ontario has indeed been quite rapid. In 1966 the proportion of population living in Census Metropolitan Areas and in Major Urban Areas (as defined by Dominion Bureau of Statistics) was 66.3 per cent. The United States census of 1960 shows that 62.0 per cent of Americans were living in Standard Metropolitan Areas. Allowing for the time lapse it is safe to assume that the degree of urbanization in Ontario has been about the same as that of the U.S.A.

The concentration of population in the seven major urban areas of Ontario is expected to continue as people move away from rural areas. In addition to the seven major agglomerations already mentioned, some smaller centres of population are forming — to name a few, the Lakehead, Niagara, Kingston and Peterborough. The main drawing point of the agglomerations is that they provide a focus for human activity. They are the centres where goods and ideas are exchanged, and where political, cultural and social life are concentrated.

Turning briefly to an examination of the growth pattern among counties and districts in Ontario during the period 1961-1966, we find that population growth in eight counties surpassed the overall Ontario growth rate and the population of nine counties actually declined. Fifteen counties had a growth rate of 1.1 per cent to 2.2 per cent per annum, and twenty-two had a growth rate of only 0.01 per cent to 1.0 per cent per annum.

It can be readily observed that all the rapid-growth counties have within them, or are situated near, a conurbation, whereas counties whose population has declined lack such centres. Of the nine counties with declining populations Elgin and Renfrew may



Counties with above-average growth, 1961-1966	Annual Rate of Growth	Counties whose population declined, 1961-1966	Annual Rate of Decline	regions of Ontario, was as follows in 1901 and 1966:		
				Economic Regions	1901	1966
Essex	9.1	Haliburton	2.8	Eastern Ontario	6	15
Halton	5.7	Manitoulin	1.2	Lake Ontario	3	8
Ontario	4.7	Glengarry	1.1	Central Ontario	1	21
Waterloo	4.2	Parry Sound	0.9	Niagara	3	14
York	3.1	Rainy River	0.6	Lake Erie	3	7
Carleton	2.9	Elgin	0.3	Lake St. Clair	3	5
Lincoln	2.9	Dundas	0.1	Mid-Western Ontario	4	8
Middlesex	2.4	Prescott	0.1	Georgian Bay	3	8
		Renfrew	0.04	Northeastern Ontario	1	9
				Northwestern Ontario	2	4
				<b>Total</b>	<b>29</b>	<b>99</b>

move in the future into the growth category since they have some potential with regard to industrialization.

A comparison of the regional rates of population growth shows that the Central, Niagara, Northwestern and Northeastern Regions had mostly higher than the average annual growth rate for Ontario during 1911-1966. The rest of the regions had mostly lower than the average annual growth rate for Ontario. However, among the former group of regions all except Central Ontario were lower than the average growth rate for Ontario in recent years as seen below.

The share of the various economic regions in the population of the province has undergone significant changes in the period 1901-1966. Eastern Ontario's share in the total

population of the province decreased from 18.6 per cent in 1901 to 12.2 per cent in 1966, Lake Ontario's share decreased from 10.9 per cent to 5.0 per cent; Lake Erie's from 9.8 per cent to 6.3 per cent; Mid-Western Ontario's from 10.1 per cent to 6.1 per cent and Georgian Bay's from 12.7 per cent to 4.7 per cent.

The economic regions: Central Ontario, Eastern Ontario and Niagara together contained over 60 per cent of Ontario's population in 1966. York County alone had 29 per cent of the province's population and this county along with Carleton, Wentworth, Middlesex and Essex contained nearly 50 per cent of the total provincial population.

The distribution of cities, towns and villages of 5,000 and over, among the ten

Because of the small urban population in the Northwestern and Northeastern Ontario Regions in 1901 the size of the cities, towns and villages in these areas has increased 40 to 60 times over the 65-year period. The increase over the 65-year period has been about 10 to 12 times for the Niagara, Central Ontario and Lake St. Clair Regions. For the Eastern Ontario, Lake Ontario, Lake Erie and Georgian Bay Regions the increase was in the range of five to seven times the 1901 population.

## FERTILITY

The study of the frequency of the two absolute events in the life of every person — birth and death — has interested inquisitive men for quite some time. A number of people during the 17th and 18th centuries observed some regularity in their occurrence, which suggested to them that a type of natural law could be observed or a form of measurement could be formulated in order to make comparisons possible over time in the same population, as well as to compare these events among different populations at the same period of time. Johann Peter Süssmilch (in his work "The Heavenly Order", Berlin, 1741) was one of the first to suggest that such measurements are possible in the form of a ratio of births and deaths for a given number of persons. Since then, this crude measurement, which is still used today for quick comparisons, has undergone several refinements, as for example the introduction of the concept of 'age-specific' birth rate, which denotes the number of births a year per thousand

## Economic Regions Showing Population Growth Rates Higher (x) or Lower (—) than for Ontario, 1911-1966

Regions	1911	1921	1931	1941	1951	1956	1961	1966
Eastern Ontario	—	—	—	x	—	—	x	—
Lake Ontario	—	—	—	—	—	—	—	—
Central Ontario	x	x	x	x	x	x	x	x
Niagara	x	x	x	x	x	x	—	—
Lake Erie	—	—	—	—	x	—	—	—
Lake St. Clair	—	x	x	—	x	—	—	—
Mid-Western Ontario	—	x	—	—	—	—	—	—
Georgian Bay	—	x	—	—	—	—	—	—
Northeastern Ontario	x	x	x	x	—	—	—	—
Northwestern Ontario	x	x	x	x	—	—	—	—



women of a given age, or the 'gross reproductive rate' which tells us how many female children will be born per thousand mothers in their lifetime if the observed birth rates remain constant through their reproductive period.

A study of fertility trends in Ontario during the period 1921-1968 reveals that sizable variations have occurred in both the crude birth rate and in its various refinements. Similar trends here occurred elsewhere in the western world. In Ontario both the direction and the degree of these fluctuations were concomitant to the general behaviour of this variable abroad, at least in countries of a similar socio-economic structure.

Crude birth rates declined steadily during the second and third decades of this century from a relatively high level of 25.3 births per thousand population in 1921 to the lowest point ever recorded in Ontario of 16.9 births per thousand population in 1937.

A similar decline occurred in most other countries as the following table illustrates:

Country	Births per 1,000 Population	
	1921-30	1930-40
United States	23.5	17.2
England and Wales	18.3	14.8
France	18.8	15.5
Switzerland	18.5	15.8
Sweden	17.5	14.4

From 1937 onward the fertility curve started to climb, reaching its highest point of 26.8 births per thousand population in 1957. After reaching this point a downward trend began and in 1968 only 17.4 births per thousand population were recorded, which is only slightly higher than the record low level of 1937.

In the light of the foregoing observations it is difficult to reach a conclusion as to whether the upturn in the fertility curve between 1937 and 1957 was only a temporary phenomenon representing births postponed because of war conditions or part of a cyclical pattern. The period under observation is too short to arrive at a meaningful conclusion.

A more refined measurement of fertility is the ratio of the number of children born per thousand women of childbearing age: 15-49 or 15-44 (the age bracket differs from country to country). This rate is usually referred to as the 'general fertility rate' (not to be con-

fused with the 'total fertility rate'). The obvious advantage of this rate is that it eliminates the influence of differences in the sex and age structures of different populations, such as the preponderance of males over females, as well as the proportion of women who are not in the child-bearing age bracket. However, it does not eliminate differences in the age distribution of women in the reproductive age bracket (15-49) and it does not take into account the marital status of women in this particular age bracket.

The general fertility rates are usually four to five times higher than the crude rates since the proportion of women in the reproductive age bracket constitutes from 1/5 to 1/4 of the total population. The general fertility rates in Ontario, like the crude birth rates, have undergone the same variations over the period of time (1921-1968) except for the decade 1950-1959 when the general fertility rate increased twice as fast as the crude birth rate. This would indicate that a change in the age pattern of fertility occurred, most probably as a result of births postponed during the war.

During the period 1951-1966 the average general fertility rate for the Province was 98.70.

Tables 3 and 4 provide age-specific birth rates for Ontario and Canada. Age-specific birth rates constitute the most important refinement in the measurement of fertility and they are arrived at by dividing the number of births to mothers of each age group in a given year by the number of women of this age and multiplying this figure by 1,000. In other words, it is the number of births a year per 1,000 women of a given age.

Scrutiny of the age-specific birth data for Ontario during the period 1921-1966 shows the importance of the 20-24 and 25-29 age groups. These two age groups account for the majority of total births. Between 1921 and 1941 the 25-29 age group was the most fertile. In 1941 the 20-24 age group moved into first place, replacing the 25-29 age group as the most fertile. The 30-34 age group has maintained third place during the whole period. The shift in the relative positions of the 20-24 and 25-29 age groups was mainly due to the fact that after 1941 the average age at which marriages were contracted was lowering, and also that the reproductive process was beginning earlier in marriage. Another factor might also be the shift to smaller families, or the earlier completion of the reproductive cycle.

Comparisons of fertility rates for the seven female age groups shows that all of them, except the 15-19 age group, experienced a decline in fertility between 1921 and 1941. From 1941 onward, fertility for all groups was increasing, reaching a post-war peak in 1957 for the 15-19, 35-39, 40-44 and 45-49 age groups, whereas the age groups 20-24, 25-29, 30-34 reached their peak three years later in 1960. The combined weight of fertility of these three age groups carried the fertility curve in Ontario to its apex in 1960.

The following table illustrates the fertility behaviour of the seven age groups during the period 1921-1966:

Age Group	Per Cent Increase or Decrease	
	1921-1960	1960-1966
15-19	+100.0	-19.0
20-24	+ 60.5	-29.0
25-29	+ 25.2	-26.2
30-34	- 5.8	-26.7
35-39	- 27.0	-26.4
40-44	- 44.3	-25.0
45-49	- 70.6	-13.3

Between 1921 and 1960 the three youngest age groups experienced a substantial increase in fertility rates, whereas in 1960 the remaining four age groups had a lower fertility rate than at the beginning of the period. The youngest age group (15-19) doubled its fertility rates, the oldest (45-49) showed a significant decline - to such a degree that it is presently considered, for practical purposes, advisable to delete this age group when calculating the general fertility rate.

Between 1960 and 1966 the youngest (15-19) and the oldest (45-49) age groups have recorded the smallest reductions in fertility rates, the latter because it already had a very insignificant rate. The fertility rates of the remaining five age groups declined almost at a uniform rate, ranging from 25.0 per cent to 29.0 per cent.

Let us now turn our attention to Table 5 which shows the 'Birth by Order in Family' pattern in Ontario during the period 1927-1966. This table provides important statistical information on past and future trends in fertility. At the same time it can provide a clue to the future trends in population growth patterns.

Scrutiny of this table allows us to formulate a general statement concerning the relationship between fertility levels and the



birth order in families, namely that during a period of high fertility the proportion of first and second births in families decreases, whereas in periods of low fertility the reverse is true. The explanation of this relationship is simple. A reduction in fertility is usually achieved at the expense of higher order births in families, that is, by foregoing a third, fourth . . . etc. child in the family.

During the period of declining fertility (1927-1941) the proportion of first births increased by 48.8 per cent, and remained high during 1941-1947. From 1947 to 1963 — a period of high fertility in Ontario — the proportion of first births fell by 28.8 per cent, and between 1963 and 1966 — a period of declining fertility — they increased by 26.3 per cent.

Conversely, the proportion of higher order births in families (six or more) fell during the period 1927-1941 by 40.3 per cent, remained low during 1941-1947, increased by 37.5 per cent between 1947 and 1963, and fell by 25.3 per cent between 1963 and 1966.

The analysis of the births order in the family could also be conducted with reference to the problem of population reproduction. In other words, the question could be asked whether the prevailing fertility trends will allow the present generation to be replaced by a generation of equal size, creating a stationary population, or replaced by a generation larger than the present one (expansive trend), or by a smaller generation (constrictive trend).

It is obvious that one child in a family does not allow for a straight reproduction of one generation by another one of equal size. Neither does a two-children family, since we must take into account mortality and such factors as those who never marry, as well as childless couples. At best only three-children families can predicate a straight replacement of one generation by another one. Some demographers maintain that this is possible only with four-children families. This of course is a matter of opinion, as well as a given community's age and sex structure, prevailing marriage rates, etc.

However, the undisputed fact remains that births of the fifth order or more will establish an expansionary trend of population growth, assuming no migration.

Scrutiny of Table 5 reveals that in Ontario only prior to 1931 was the proportion of first and second order births below the 50 per cent mark. From 1931 onwards the ratio steadily increased reaching its highest level

of 66.4 per cent in 1947, then, with improving fertility rates the ratio started to decline, reaching a post-war low of 51.9 per cent in 1963 and thereafter resuming an upward trend, reaching a level of 60.1 per cent in 1966 — equal to that in 1940.

The question may then be asked, how does one explain the rapid growth rate of population in Ontario, discussed earlier, in the light of the foregoing argument that a two-children family trend will produce a constrictive trend on population growth? Simply stated, the growth of population in Ontario in recent years was sustained by a large scale immigration, as well as by declining mortality rates.

## MIGRATION

Population growth of any given area depends upon the interplay of two sets of variables:

- the natural increase, which is dependent on the interaction of fertility and mortality trends and;
- net migration, which is the sum of the following components;
  - a) net international migration (immigration — emigration),
  - b) net interprovincial migration (in-migration — out-migration),
  - c) intra-provincial migration.

### Net International Migration

Since the end of the war Ontario has received the largest share of immigrants arriving in Canada. At the turn of the century Ontario received only 12.6 per cent of the total number of immigrants to Canada, while in 1967 the province's share increased to 52.4 per cent. This was not the largest share ever received, since in 1947, 1956 and 1966 the ratio of immigrants who declared that Ontario would be their destination topped the 55.0 per cent mark. During the period 1946-1967 Ontario received 52.6 per cent of the total immigration to Canada (1,537,000 out of 2,922,000). In absolute figures the number of immigrant arrivals increased from 6,200 in 1901 to 116,850 in 1967.

The volume of immigration in any particular period of time depends upon the interplay of economic and political conditions in Canada and abroad. Usually immigration increases when economic conditions are favourable in Canada and relatively depressed in Europe. Political events abroad also influence the flow of immigrants, as for example the post-war upheaval in Europe,

the political unrest in Central Europe in 1956 and 1957 and the most recent events in Czechoslovakia. However, future Canadian immigration will be directed mainly by our internal economic situation. This policy is plainly spelled out in the recent Immigration Act which states that the principle of selecting immigrants is to be based on the requirements of the Canadian labour force (skill and need principle). Similar legislation recently passed by the United States Congress is now affecting emigration from Canada to the United States.

For these reasons it is difficult to foresee future levels of immigration, but the general impression prevails that in the long run the average number of immigrants settling in Ontario will be between 75,000 and 100,000 per annum.

In order to arrive at the net international migration figure for any time period it is necessary to subtract the number of Ontario residents who have moved abroad. There is no official record of such movements. Some of the required information can be extracted from United States and United Kingdom sources.

Emigration to the United States fluctuated during the post-war period between 20,000 persons in 1946 and 51,000 in 1964. Since then emigration to the United States has been falling off, partly because emigrants are exposed to the draft legislation, as well as the recent immigration legislation making it more difficult for prospective emigrants to qualify for entry. However, the non-economic factors may change and the restrictions imposed on immigration may be relaxed with respect to immigrants from Canada.

Emigration to the United Kingdom is of a smaller order — roughly one-quarter of the total emigration to the United States. During the period 1946-1966 the figures were:

U.S.A.	704,420
U.K.	165,689

The emigration curves to both of these countries ran in opposite directions during the period 1946-1953; emigration to the U.S.A. rose steeply from 20,000 in 1946 to 36,300 in 1953, while emigration to the U.K. fell from 9,100 in 1946 to 6,900 in 1953, reaching a low point of 5,000 in 1951. From 1953 to 1961 both curves moved in the same direction, i.e. upward, reaching a high level of 47,500 emigrants to the U.S.A. in 1961 and 12,200 emigrants to the U.K. in 1959. Between 1961 and 1965 emigration to the



U.S.A. stabilized around 50,000 persons per annum, falling sharply to 37,300 in 1966. On the other hand, emigration to the United Kingdom has declined sharply since 1959, reaching its lowest post-war level of 3,300 persons per annum in 1966.

Emigration to the rest of the world is very difficult to estimate, but on the whole it is not considered to constitute a significant quantity.

Beginning with 1959 statistics are available showing immigration to Ontario by the country of last permanent residence. Five countries, Great Britain, Italy, Germany, the United States and France contributed 399,300 or 66.6 per cent of all immigrants during the period 1959-1967. The percentage breakdown for each country is shown in the following table:

Great Britain	29.2%
Italy	21.1%
United States	8.4%
Germany	6.8%
France	1.1%
<b>Total</b>	<b>66.6%</b>

The remaining 199,795 immigrants, 33.4 per cent of the total, came from the following areas:

Other West European Countries	18.1%
East European Countries	3.7%
Australia and New Zealand	1.5%
Africa	0.9%
Asia	3.4%
Middle East	1.7%
West Indies	2.2%
Central America	0.2%
South America	1.7%

It is interesting to note that during this period immigration to Ontario from the West Indies, Asia and Africa increased in absolute numbers almost eight times, from 1,819 persons in 1957 to 13,756 in 1967.

During the period 1946-67 Ontario absorbed 1,536,700 immigrants of which 800,050 (or 52.1 per cent) intended to join the labour force and 736,650 (or 47.9 per cent) were classified as dependants. Some of the latter group also entered the labour force

upon completion of their education, or, in the case of wives, when they found it convenient to do so.

The occupational mix of immigrants intending to join the labour force upon entry into Ontario, underwent a significant change during the twenty-one year period. The proportion of immigrants with "Professional and Technical" qualifications increased from 3.9 per cent at the beginning of the period to 19.8 per cent at the end of the period. Similarly, the ratio of immigrants in the clerical and service fields increased from 12.8 per cent to 24.1 per cent. Immigrants with skills useful in manufacturing and construction fluctuated around the 23.0 per cent and the 10.0 per cent level respectively. The proportion of unskilled labourers rose between 1946 and 1960 from 11.8 per cent to 14.3 per cent but declined to 11.0 per cent in 1967.

On the other hand, the proportion of immigrants in primary occupations (agriculture, fishing, logging and mining) fell from 24.0 per cent in 1946 to 3.9 per cent in 1967. Similarly, the proportion of immigrants with skills suitable to the transportation industry fell from 2.4 per cent to 1.1 per cent.

#### Occupations of Immigrants to Ontario by Main Occupational Divisions 1946-1967

	1946-1952		1953-1955		1956-1960		1961-1967		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>All Occupations</b>	222,522	100.0	121,281	100.0	212,092	100.0	244,157	100.0	800,052	100.0
Professional and Technical	8,636	3.9	12,195	10.1	22,073	10.4	48,597	19.8	91,501	11.4
Managerial and Official	n.a.	—	2,077	1.7	2,290	1.1	5,372	2.2	9,739	1.2
Clerical	15,439	6.9	11,211	9.2	24,955	11.7	33,260	13.6	84,865	10.6
Finance	n.a.	—	231	0.2	632	0.3	602	0.2	1,465	0.2
Sales	9,295	4.2	4,407	3.6	9,066	4.3	7,422	3.0	30,190	3.8
Service	13,045	5.9	16,347	13.5	29,692	14.0	25,745	10.5	84,829	10.6
Agriculture, Fishing, Logging	49,684	22.3	16,195	13.4	17,545	8.3	9,346	3.7	92,770	11.6
Mining	3,775	1.7	502	0.4	2,279	1.1	604	0.2	7,160	0.9
Manufacturing and Mechanical	53,774	24.1	25,497	21.0	45,518	21.5	58,512	24.0	183,301	22.9
Construction	20,286	9.1	12,154	10.0	21,412	10.1	23,389	9.6	77,241	9.7
Transportation	5,257	2.4	2,174	1.8	3,697	1.7	2,647	1.1	13,775	1.7
Communications	n.a.	—	614	0.5	1,565	0.7	1,092	0.4	3,271	0.4
Unskilled Labourers	26,279	11.8	16,487	13.6	30,313	14.3	25,828	11.0	98,907	12.4
Occupation not stated	17,052	7.7	1,190	1.0	1,055	0.5	1,741	0.7	21,038	2.6
<b>Total Dependents</b>	182,799	—	109,431	—	199,987	—	244,428	—	736,645	—
<b>Total Immigrants</b>	405,321	—	230,712	—	412,079	—	488,585	—	1,536,697	—



### Net Balance of Interprovincial Exchange of Migrants<sup>1</sup>

Province	1931-41	1941-51	1951-61
Newfoundland	—	—	8,100
Prince Edward Island	750	3,860	6,480
Nova Scotia	1,400	22,600	28,540
New Brunswick	2,400	18,500	20,550
Quebec	8,400	27,650	17,700
Manitoba	24,300	28,100	17,500
Saskatchewan	27,400	36,200	23,000
Alberta	6,100	7,250	2,930
British Columbia	-2,500	-8,100	-500
Yukon and N.W.T.	100	-900	100
<b>Net Gain for Ontario</b>	<b>68,350</b>	<b>135,160</b>	<b>124,400</b>

<sup>1</sup>Estimated.

### Interprovincial Migration

The extent of interprovincial migration in Canada can be gleaned from decennial census reports. For the purpose of this study three decades have been selected for comparison, namely: 1931-41, 1941-51, and 1951-61. Throughout the discussion of the effects of interprovincial migration on the population of Ontario we will refer to these as the first, second and third periods.

The estimated net gains accrued to Ontario because of these interprovincial movements of people were:

1931-41	68,350
1941-51	135,160
1951-61	124,400

The estimated net balance of population movements with each province was as indicated in the above table.

It should be remembered that the foregoing table shows *net balances* which, with the exception of British Columbia, were in favour of Ontario in all three decades examined. The exchange of people across provincial boundaries has never been a completely one-sided movement. On the contrary, these interprovincial movements exhibit a multi-directional pattern, involving all provinces. However, these movements are almost impossible to trace unless Canada adopts a central population registry — a most unlikely supposition, since the creation of such an office would meet with almost universal opposition. The magnitude of these interprovincial population exchanges does however lend itself to statistical analysis, which has produced the following estimate for the period 1951-61 in the form of a *ratio*

of the number of out-migrants (from Ontario) to a particular province, to the number of in-migrants (to Ontario) from a particular province:

### Ratio of Out-migrants to In-migrants, Ontario, 1951-1961<sup>1</sup>

Province	Ratio
Newfoundland	15.7
Prince Edward Island	8.6
Nova Scotia	26.1
New Brunswick	23.4
Quebec	68.3
Manitoba	22.8
Saskatchewan	0.0
Alberta	76.9
British Columbia	103.8
Yukon and N.W.T.	90.6
<b>All Provinces</b>	<b>39.0</b>

<sup>1</sup>Ratios based on interprovincial migration estimates.

This table shows that the number of Ontario residents moving to British Columbia exceeded the number of British Columbia residents moving to Ontario by almost 4.0 per cent. Very high exchange rates are estimated for Alberta and Quebec. The Yukon and N.W.T. also show a very high ratio of exchange but in absolute numbers these exchanges involve less than 1,000 persons in each direction. Very low exchange rates are estimated for Newfoundland and Prince Edward Island. Population exchange with Saskatchewan appears to be a one-way operation, in favour of Ontario. Exchange

with Nova Scotia, New Brunswick and Manitoba appears to be approximately a one-to-four ratio; for every Ontario resident moving to these provinces we receive four in return.

It may be useful at this stage to place the two main sources of population growth in Ontario — natural increase and net migration — into some perspective. The relationship of the population growth components in Ontario during the period 1931-1961 can best be illustrated by the table on page 12.

All this yields several interesting observations:

- the total size of population increments between these three periods increased 127.5 per cent between the first and second periods, and 102.3 per cent between the second and third periods.
- the relative importance of the two components of population growth — natural increase and net migration — are changing. Natural increase diminished from 78.2 per cent in the first period to 58.1 per cent in the third period. On the other hand, the net migration component increased its share from 21.8 per cent in the first period to 41.9 per cent in the third.
- an even more dramatic change occurred in the relative positions of the two sub-components; in the first period (1931-41) international migration played a minor part in the growth of Ontario's population (2.6 per cent), whereas in the last period (1951-61) it accounted for 34.3 per cent of the total growth of the province's population. The net interprovincial migration contributed almost  $\frac{1}{5}$  to the total population increment in the first period (19.2 per cent) whereas in the third period its contribution fell to 7.6 per cent. In other words, during the first period, for every immigrant from abroad Ontario received roughly seven people as a result of interprovincial migrations (mostly from the Prairie provinces — 85.0 per cent); during the second period the ratio of immigrants to interprovincial migrants was almost 1:1; and during the third period for every person who moved to Ontario from another province we received 4.5 people from abroad.

### Internal Migration in Ontario

Although internal migration does not contribute to the overall growth of population of any province and country it does serve as an



Components of Population Growth, Ontario 1931-1961

	1931-41		1941-51		1951-61	
	Number	% of Total Population Growth	Number	% of Total Population Growth	Number	% of Total Population Growth
Total Population Growth in Ontario	355,972	100.0	809,887	100.0	1,638,550	100.0
Natural Increase	278,488	78.2	520,494	64.3	951,930	58.1
Net Migration	77,484	21.8	289,393	35.7	686,620	41.9
(Net International Migration)	9,178	2.6	154,238	19.0	562,228	34.3
(Net Interprovincial Migration) <sup>1</sup>	68,306	19.2	135,155	16.7	124,392	7.6

<sup>1</sup>Estimated.

important vehicle of population redistribution. The causes stimulating internal migration are varied and usually involve both "push" and "pull" factors, which fall into three basic categories: personal, sociological and economic.

*Personal:* family reasons, retirement, illness, etc.

*Sociological:* maladjustment to community, wanderlust, presence of relatives or friends, physical and cultural amenities, etc.

*Economic:* better employment opportunities, better wages, better working and living conditions, population pressure, technological changes in industry and agriculture, transportation facilities, etc.

Economic considerations always play an important part in migration. People tend to move from areas of low economic opportunity to areas of high economic opportunity. On the other hand, the non-economic factors such as better physical and cultural amenities cannot be overlooked. It is difficult to separate these factors, since in most cases they augment each other. However, it is safe to assume that some combination of economic and socio-cultural factors are the motivating forces in internal migration.

Direct measurement of internal migration is impossible in the absence of a central population registry. However, some measurement can be achieved by asking certain questions during the national census, as was done in 1961 and will probably be repeated in the 1971 census. Such questions may allow us to calculate the volume and the direction (in a

very broad sense) of migration streams. On the whole, however, these measurements lack precision and at best present only a general indication of the volume and direction of internal migration.

There are few surprises in the listing of counties which have gained population, since all of them include, or are located near, major urban centres. However, there are some surprises on the "loss" side of the balance sheet which should be explained. York County is shown as losing 2,500 people, which is interesting considering the number of immigrants it has attracted. However, it can be safely assumed that these people probably moved to the neighbouring Counties of Peel and Halton, both of which have shown large gains. The same could be said about Wentworth County which is also shown on the losing side of the balance sheet and whose residents probably moved across to Halton County (Burlington). Essex County is shown as the biggest loser but this is easily explained by the fact that during the period of 1951-61 economic conditions in that area were rather depressed. The same explanation applies for Welland County.

Tentative estimates of intra-provincial migration during the period 1961-66 suggest that the propensity to migrate increased. However, these estimates are less accurate than those for the period 1951-61 because we have no reliable data on the distribution of immigrants across the province.

These estimates show that only nine counties definitely gained through these movements, eleven were only slightly affected and thirty-four lost a large number of their resi-

dents. This out-migration affected mainly the districts of Northeastern and Northwestern Ontario, as well as most counties in Eastern Ontario (except Carleton County, which had a favourable net balance in in-migration). Central Ontario attracted the majority of migrants, followed by the Mid-Western Ontario Region. This intensification of internal movements can best be illustrated in this way: during the 1951-61 period (ten years) the net total of these movements was 86,000 whereas in the five-year period 1961-66 it is estimated that the total was 77,000.

Six areas which were listed during the period 1951-61 as gaining appreciably through internal migration are shown in the 1961-66 period as losing a considerable number of their residents. These are the Districts of Algoma, Sudbury, Nipissing and the Counties of Renfrew, Simcoe and Lambton. Essex County, which lost heavily during the fifties, is shown as attracting some migrants in the sixties.

As we can see from the foregoing discussion, it is not easy to assess the magnitude and direction of migration streams, since internal migration is sensitive to constantly changing stimuli, an example of which we have seen in the case of Essex County during the period 1951-1966, or in the case of the northern districts, which at one time were able to attract a great number of new residents only to lose them in the succeeding period. It could also be said that certain areas are prone to migration, as in the case of most counties in Eastern Ontario and the rural counties around Georgian Bay. On the other hand, counties situated around the western shore of Lake Ontario, from Oshawa to Niagara Falls seem to possess a magnetic attraction for migrants. Carleton and Waterloo counties are also able to attract a constant stream of migrants. The case of Carleton County is of special interest since it is surrounded by an area which traditionally loses people.

Internal migration then, as a distributive force, affects the growth or decline of particular areas in Ontario. But the areas in Ontario, which have an attraction for provincial migrants, also attract migrants from other provinces and from abroad. In addition, the natural increase indexes for these areas tend to be above the provincial average because of above-average fertility rates and below-average mortality rates. The cumulative effect of all these trends (migratory and vital statistics) contribute greatly to the



unevenness of population in Ontario on the one hand, and to the rapid growth or decline of particular areas on the other.

Ontario is not unique in this process. Similar trends are observed in the United States, where east-to-west and south-to-north migration streams have been noticeable for years. In England, the London urban agglomeration and the south coast attract a considerable number of migrants, whereas the Midlands and the northern districts are constantly losing members of their population. In Germany the general drift is to the

west, and in Italy from the southern provinces to the northern industrial areas. Even in the socialist countries, where movements of people can be, and are, regulated by the state, some areas seem to be more attractive than others, as for example in the U.S.S.R. the Moscow urban area, and in Poland the central area around Warsaw and the western provinces.

The attraction of urban life intensifies the rural-urban movements. Technological advances in agriculture will free a considerable number of people presently engaged in farm-

ing. Whether they will move to the major urban agglomerations is debatable. Some researchers suggest that the difficulties in living conditions encountered in large areas will make them less desirable places to settle, whereas the medium-sized city offers most of the amenities of city life without the frustrations now prevalent in large centres (expensive housing, costly transportation, etc.). If this prediction of future trends in migration becomes true then we could expect a faster rate of growth for our cities and towns in the range of 20,000-100,000 population.

## Appendix

**Table 1 — Age Distribution of Ontario Population<sup>1</sup> by Census Years 1901-1966**

Age Group	1901		1911		1921		1931		1941		1951		1961		1966	
	000's	% of Total	000's	% of Total	000's	% of Total	000's	% of Total	000's	% of Total	000's	% of Total	000's	% of Total	000's	% of Total
0-4	224.8	10.3	263.3	10.4	301.8	10.3	307.7	9.0	297.9	7.9	514.7	11.2	740.2	11.9	745.7	10.7
5-9	230.6	10.6	244.2	9.7	307.9	10.5	333.0	9.7	301.5	8.0	399.3	8.7	674.5	10.8	770.1	11.1
10-14	229.8	10.5	233.8	9.3	275.8	9.4	318.3	9.3	324.8	8.6	325.3	7.1	593.0	9.5	688.3	9.9
15-19	229.7	10.5	240.8	9.5	254.9	8.7	319.0	9.3	339.1	8.9	315.7	6.9	436.9	7.0	599.2	8.6
20-24	216.0	9.9	247.2	9.8	239.9	8.2	291.3	8.5	324.0	8.5	352.4	7.6	387.0	6.2	485.1	7.0
25-29	178.6	8.2	228.4	9.0	238.5	8.1	264.7	7.7	315.7	8.3	387.2	8.4	422.7	6.8	433.9	6.2
30-34	154.9	7.1	195.6	7.7	224.4	7.7	252.2	7.3	286.5	7.6	351.0	7.6	459.8	7.4	447.1	6.4
35-39	144.0	6.6	172.0	6.8	219.5	7.5	246.7	7.2	268.4	7.1	340.8	7.4	469.3	7.5	472.6	6.8
40-44	127.1	5.8	150.1	5.9	187.1	6.4	228.6	6.6	250.3	6.6	302.3	6.6	397.3	6.4	469.4	6.7
45-49	104.4	4.8	133.1	5.3	161.1	5.5	206.2	6.0	232.6	6.1	268.1	5.8	360.8	5.8	391.0	5.6
50-54	89.1	4.1	116.5	4.6	141.2	4.8	177.7	5.2	214.1	5.6	247.5	5.4	309.8	5.0	353.4	5.1
55-59	70.6	3.2	87.2	3.5	112.4	3.8	137.1	4.0	181.8	4.8	210.3	4.6	258.3	4.1	293.3	4.2
60-64	62.7	2.9	72.3	2.9	96.9	3.3	115.0	3.3	149.6	3.9	182.5	4.0	218.5	3.5	244.1	3.5
65-69	47.3	2.1	54.8	2.2	69.8	2.4	92.7	2.7	116.4	3.1	155.1	3.4	180.1	2.9	199.2	2.9
70-74	34.7	1.6	40.8	1.6	48.0	1.6	71.6	2.1	85.9	2.3	116.0	2.5	146.3	2.3	159.1	2.3
75-79	21.3	1.0	26.0	1.0	29.6	1.0	40.0	1.2	55.3	1.5	70.4	1.5	97.7	1.6	108.5	1.6
80+	17.3	0.8	21.2	0.8	24.9	0.8	29.9	0.9	43.8	1.2	58.9	1.3	83.9	1.3	100.9	1.4
<b>Total</b>	2,182.9	100.0	2,527.3	100.0	2,933.7	100.0	3,431.7	100.0	3,787.7	100.0	4,597.5	100.0	6,236.1	100.0	6,960.9	100.0

<sup>1</sup> at June 1st.

Source: DBS, Census of Canada, 1961 for Years 1901-1961.  
DBS, Census of Canada, 1966 for Year 1966.



Table 2 — Ratio of Working Age Population of Ontario for Census Years 1931-1966 by Economic Regions and Counties

Working Age Population <sup>1</sup> as Per Cent of Total Population							Working Age Population <sup>1</sup> as Per Cent of Total Population						
Regions and Counties	1931	1941	1951	1956	1961	1966	Regions and Counties	1931	1941	1951	1956	1961	1966
<b>Eastern Ontario</b>							<b>Lake St. Clair</b>						
A — Ottawa Valley:							A — Border:						
Carleton	65.8	69.7	65.3	62.3	60.6	61.5	Essex	63.7	67.6	64.9	61.6	58.3	58.6
Lanark	63.2	63.7	60.0	57.4	56.0	56.7	Kent	62.5	64.5	61.6	59.1	57.6	57.8
Prescott	55.6	58.5	55.9	54.6	54.7	55.2	Sub-total	63.4	66.7	64.1	61.0	58.1	58.4
Renfrew	59.0	62.4	60.9	57.9	55.8	56.1	B — Lambton:						
Russell	53.6	57.4	53.2	52.0	52.1	53.2	Lambton	63.4	64.6	61.8	59.0	57.3	58.2
Sub-total	62.7	66.4	62.9	60.2	58.8	59.7	Sub-total	63.4	64.6	61.8	59.0	57.3	58.2
B — Upper St. Lawrence:							<b>Total — Lake St. Clair</b>	63.4	66.3	63.6	60.5	57.9	58.3
Dundas	61.4	62.7	57.8	57.0	56.0	56.6	<b>Mid-Western</b>						
Frontenac	65.1	67.4	64.5	61.5	60.3	61.5	Huron	62.4	62.3	59.3	57.3	55.8	56.8
Glengarry	57.3	59.1	54.4	52.2	53.2	54.2	Perth	63.2	64.7	61.0	58.3	56.9	57.5
Grenville	62.1	63.3	59.7	58.3	57.2	57.3	Waterloo	64.7	68.2	65.2	61.6	59.8	60.5
Leeds	64.3	64.7	61.0	59.6	58.9	59.5	Wellington	—	65.3	62.3	59.4	57.6	57.8
Stormont	59.7	62.0	59.6	59.0	56.4	57.6	<b>Total — Mid-Western</b>	64.4	65.8	62.8	59.9	58.3	59.0
Sub-total	62.3	64.0	60.9	59.2	58.0	59.1	<b>Georgian Bay</b>						
<b>Total — Eastern Ontario</b>	62.6	65.6	62.2	59.9	58.6	59.5	A — Blue Water:						
<b>Lake Ontario</b>							Bruce	62.0	61.7	57.3	55.6	54.8	55.0
Durham	62.7	63.8	60.4	57.1	56.0	57.1	Dufferin	64.1	63.9	58.7	56.7	56.5	56.8
Haliburton	57.6	60.1	59.3	58.4	57.2	58.1	Grey	62.1	62.9	59.9	58.0	56.7	57.1
Hastings	60.7	63.7	60.3	58.1	56.8	57.7	Simcoe	63.1	64.8	61.0	58.0	56.3	57.3
Lennox & Addington	61.4	61.3	57.2	56.0	55.2	56.0	Sub-total	62.7	63.5	59.9	57.5	56.2	56.8
Northumberland	62.5	63.8	59.2	56.3	55.6	56.4	B — Highlands:						
Peterborough	63.7	65.9	61.4	58.4	57.0	59.0	Muskoka	61.6	64.3	60.7	58.1	56.7	56.9
Prince Edward	61.1	62.0	59.2	57.6	55.4	56.7	Parry Sound	59.2	62.8	57.5	56.1	55.9	55.7
Victoria	63.2	64.1	58.8	56.8	56.2	56.8	Sub-total	60.3	63.4	59.0	57.1	56.2	56.0
<b>Total — Lake Ontario</b>	62.0	63.8	60.0	57.6	56.4	57.5	<b>Total — Georgian Bay</b>	62.2	63.5	59.7	57.4	56.2	56.8
<b>Central</b>							<b>Northeastern Ontario</b>						
Halton	66.0	67.7	63.0	59.8	57.6	58.7	A — Clay Belt:						
Ontario	64.2	67.9	64.2	60.7	58.3	58.8	Cochrane	63.5	64.0	61.0	59.1	57.2	56.9
Peel	65.4	67.2	62.2	60.5	58.8	59.1	Nipissing	57.3	59.9	58.8	57.5	55.9	55.9
York	69.7	72.2	69.4	66.2	63.4	63.4	Timiskaming	64.8	65.2	59.4	57.9	56.8	56.7
<b>Total — Central</b>	69.2	71.7	68.6	65.3	62.6	62.6	Sub-total	62.0	63.3	60.0	58.3	56.6	56.5
<b>Niagara</b>							B — Nickel Range:						
A — Burlington:							Manitoulin	60.3	57.9	56.4	55.6	53.5	52.8
Brant	65.3	67.4	62.9	59.6	61.8	59.3	Sudbury	62.2	63.6	61.7	59.4	57.7	57.6
Wentworth	67.8	70.7	66.4	62.8	60.6	61.3	Sub-total	61.9	62.9	61.2	59.1	57.5	57.3
Sub-total	67.2	70.0	65.6	62.2	60.8	61.0	C — Sault:						
B — Niagara:							Algoma	61.8	64.2	61.8	61.3	57.6	58.0
Haldimand	62.9	64.7	59.6	56.7	55.9	56.1	Sub-total	61.8	64.2	61.8	61.3	57.6	58.0
Lincoln	65.7	68.9	64.4	61.1	59.3	59.9	<b>Total —</b>						
Welland	65.2	69.3	64.7	61.2	59.2	60.0	<b>Northeastern Ontario</b>	61.9	63.4	60.7	59.2	57.1	57.1
Sub-total	65.0	68.6	64.1	60.7	58.9	59.6	<b>Lakehead —</b>						
<b>Total — Niagara</b>	66.4	69.5	65.0	61.6	60.1	60.4	<b>Northwestern Ontario</b>						
<b>Lake Erie</b>							Kenora	63.7	67.1	62.5	60.5	57.3	57.2
Elgin	64.2	65.8	62.7	60.2	58.9	58.9	Rainy River	60.8	63.3	59.0	57.2	54.5	56.0
Middlesex	66.6	68.3	64.6	61.7	59.8	60.4	Thunder Bay	67.1	72.5	65.3	62.2	59.4	60.1
Norfolk	62.8	63.9	62.1	60.3	59.2	58.7	<b>Total —</b>						
Oxford	64.4	65.8	62.2	60.1	58.1	58.3	<b>Northwestern Ontario</b>	65.3	69.9	63.8	61.1	58.3	58.9
<b>Total — Lake Erie</b>	65.2	66.8	63.5	61.0	59.3	59.6	<b>GRAND TOTAL —</b>						
							<b>ONTARIO</b>	65.2	67.6	64.3	61.6	59.7	60.2

<sup>1</sup>15-64 year age group.

Source: DBS, Census of Canada for respective years.



**Table 3 — Number of Births per 1,000 Women in the Child-Bearing Age Groups, Ontario, Selected Years 1921-1966**

Year	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1921	35.4	150.3	173.4	143.0	98.2	38.8	5.1
1931	35.7	127.5	145.2	114.9	74.1	28.8	3.4
1941	36.8	133.3	137.3	96.3	55.9	19.1	1.7
1946	40.4	166.9	169.7	123.2	70.0	21.7	2.1
1951	60.1	186.4	181.8	125.2	68.1	21.0	1.9
1956	66.9	225.8	205.7	135.6	73.2	22.6	1.6
1957	73.0	228.7	209.0	133.3	74.2	22.6	1.9
1958	70.6	228.8	208.3	133.0	72.8	20.9	1.7
1959	71.7	239.5	214.7	133.3	73.0	20.8	1.7
1960	70.9	241.2	217.1	134.7	71.7	21.6	1.5
1961	69.5	239.8	211.6	134.2	69.8	21.9	1.6
1962	64.5	239.9	210.5	133.9	65.6	21.9	1.4
1963	60.3	233.7	208.1	133.1	66.2	21.1	1.2
1964	57.8	219.7	202.4	128.6	64.6	20.4	1.6
1965	58.3	192.9	180.6	114.5	59.3	17.8	1.5
1966	57.4	171.3	160.2	98.8	52.8	16.2	1.3

Source: DBS, Vital Statistics.

**Table 4 — Number of Births per 1,000 Women in the Child-Bearing Age Groups, Canada, Selected Years 1921-1966**

Year	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1921	38.0	165.4	186.0	154.6	110.0	46.7	6.6
1931	29.9	137.1	175.1	145.3	103.1	44.0	5.5
1941	30.7	138.4	159.8	122.3	80.0	31.6	3.7
1946	36.5	169.6	191.4	146.0	93.1	34.5	3.8
1951	48.1	188.7	198.8	144.5	86.5	30.9	3.1
1956	55.9	222.2	220.1	150.3	89.6	30.8	2.9
1957	60.2	227.1	224.1	149.4	90.7	30.7	2.8
1958	59.2	226.5	223.3	147.9	87.6	28.9	2.7
1959	60.4	233.8	226.7	147.7	87.3	28.5	2.7
1960	59.8	233.5	224.4	146.2	84.2	28.5	2.4
1961	58.2	233.6	219.2	144.9	81.1	28.5	2.4
1962	55.0	231.6	214.6	143.1	77.1	27.6	2.1
1963	53.1	226.0	210.6	140.3	75.8	25.9	2.1
1964	50.2	212.8	203.1	134.9	72.0	25.1	2.1
1965	49.3	188.6	181.9	119.4	65.9	22.0	2.0
1966	48.2	169.1	163.5	103.3	57.5	19.1	1.7

Source: DBS, Vital Statistics.

**Table 5 — Births by Order in Family in Ontario, 1927-1966 (Percentage of Total Births)**

Year	Birth Order							
	1st	2nd	3rd	4th	5th	6th	7th	8th & More
1927	26.0	20.8	15.6	11.4	8.1	5.6	4.0	8.5
1928	26.7	21.0	15.7	10.8	7.9	5.6	3.9	8.3
1929	27.7	21.5	15.4	10.7	7.4	5.3	3.9	8.1
1930	29.0	21.7	15.0	10.5	7.2	5.1	3.8	7.7
1931	28.5	22.3	15.0	10.5	7.2	5.1	3.7	7.8
1932	27.5	22.6	15.3	10.4	7.3	5.1	3.6	8.3
1933	27.2	22.6	15.7	10.5	7.1	5.1	3.7	8.2
1934	27.9	22.7	15.5	10.3	6.9	5.0	3.6	8.2
1935	30.0	22.5	15.1	10.2	6.9	4.8	3.4	7.5
1936	31.0	22.4	14.8	9.9	6.4	4.6	3.5	7.4
1937	31.8	22.9	14.6	9.6	6.4	4.3	3.2	7.1
1938	33.4	23.5	14.4	9.2	6.0	4.0	3.0	5.5
1939	33.7	23.9	14.7	8.9	5.9	4.0	2.7	6.2
1940	35.6	24.5	14.1	8.4	5.3	3.7	2.4	5.9
1941	37.9	24.6	13.7	8.1	5.0	3.3	2.3	5.2
1942	38.6	25.2	13.6	7.8	4.7	3.2	2.2	4.6
1943	37.5	26.0	14.3	8.0	4.7	3.0	2.0	4.5
1944	34.3	27.1	15.3	8.6	4.9	3.2	2.2	4.5
1945	33.5	27.4	15.5	8.5	5.1	3.2	2.1	4.6
1946	37.0	27.6	15.0	8.0	4.5	2.7	1.7	3.6
1947	39.3	27.1	14.8	7.5	4.2	2.4	1.6	3.2
1948	34.8	28.9	16.0	8.4	4.3	2.7	1.6	3.2
1949	31.5	30.0	17.4	8.7	4.7	2.7	1.7	3.4
1950	30.5	29.6	17.9	9.2	4.9	2.9	1.7	3.3
1951	30.4	28.9	18.3	9.7	5.0	2.8	1.7	3.0
1952	32.2	27.0	18.2	10.1	5.1	2.8	1.6	3.0
1953	31.3	27.2	18.3	10.2	5.4	3.0	1.7	2.9
1954	30.8	26.6	18.6	10.5	5.7	3.1	1.8	3.1
1955	29.8	26.4	18.7	11.0	6.0	3.3	1.8	3.2
1956	29.4	26.2	18.7	11.1	6.1	3.4	2.0	3.1
1957	29.8	25.3	18.9	11.2	6.2	3.5	2.0	3.1
1958	29.4	25.3	18.5	11.5	6.4	3.6	2.1	3.2
1959	28.8	25.7	19.1	11.5	6.6	3.6	2.1	2.6
1960	28.2	25.3	18.9	11.5	6.7	3.9	2.2	3.3
1961	27.6	24.8	19.0	12.0	6.9	3.9	2.3	3.5
1962	27.1	25.1	18.8	12.1	6.9	4.1	2.4	3.5
1963	27.0	24.9	18.9	12.2	7.1	4.1	2.3	3.5
1964	27.9	25.0	18.7	11.8	6.9	4.0	2.3	3.5
1965	30.8	25.0	17.9	11.2	6.3	3.7	2.1	3.0
1966	34.1	26.0	16.8	10.0	5.5	3.1	1.7	2.6

Source: Original statistics for the years 1927-1951 were obtained from the Registrar-General's Office. Original statistics for the years 1952-1957 from "Report relative to Registration of Births, Marriages and Deaths in the Province of Ontario".

1958-1965 — DBS, Vital Statistics.



Table 6 — Ontario's Population 1839-1968

Year	Population	Year	Population	Year	Population
1839	409,048	1882	1,942,337	1925	3,111,000
1840	432,159	1883	1,961,446	1926	3,164,300
1841	455,688	1884	1,980,556	1927	3,219,000
1842	487,053	1885	1,999,665	1928	3,278,000
1843	n.a.	1886	2,018,774	1929	3,334,000
1844	n.a.	1887	2,037,884	1930	3,386,000
1845	n.a.	1888	2,056,993	1931	3,431,700
1846	n.a.	1889	2,076,102	1932	3,473,000
1847	n.a.	1890	2,095,212	1933	3,512,000
1848	725,879	1891	2,114,321	1934	3,544,000
1849	n.a.	1892	2,121,184	1935	3,575,000
1850	n.a.	1893	2,128,046	1936	3,605,500
1851 } 1852 }	952,004	1894	2,134,909	1937	3,637,000
1853	n.a.	1895	2,141,771	1938	3,672,000
1854	n.a.	1896	2,148,634	1939	3,708,000
1855	n.a.	1897	2,155,497	1940	3,747,000
1856	n.a.	1898	2,162,359	1941	3,787,700
1857	n.a.	1899	2,169,222	1942	3,884,000
1858	n.a.	1900	2,176,084	1943	3,915,000
1859	n.a.	1901	2,182,947	1944	3,963,000
1860 } 1861 }	1,396,091	1902	2,194,000	1945	4,000,000
1862	n.a.	1903	2,217,000	1946	4,093,000
1863	n.a.	1904	2,246,000	1947	4,176,000
1864	n.a.	1905	2,289,000	1948	4,275,000
1865	n.a.	1906	2,299,000	1949	4,378,000
1866	n.a.	1907	2,365,000	1950	4,471,000
1867	1,525,000	1908	2,412,000	1951	4,597,600
1868	1,548,963	1909	2,444,000	1952	4,788,000
1869	1,572,926	1910	2,482,000	1953	4,941,000
1870	1,596,889	1911	2,527,292	1954	5,115,000
1871	1,620,851	1912	2,572,000	1955	5,266,000
1872	1,651,088	1913	2,639,000	1956	5,404,900
1873	1,681,326	1914	2,705,000	1957	5,636,000
1874	1,711,564	1915	2,724,000	1958	5,821,000
1875	1,741,802	1916	2,713,000	1959	5,969,000
1876	1,772,039	1917	2,724,000	1960	6,111,000
1877	1,802,277	1918	2,744,000	1961	6,236,100
1878	1,832,515	1919	2,789,000	1962	6,351,000
1879	1,862,752	1920	2,863,000	1963	6,481,000
1880	1,892,990	1921	2,933,700	1964	6,631,000
1881	1,923,228	1922	2,980,000	1965	6,788,000
		1923	3,013,000	1967	7,149,000
		1924	3,059,000	1968	7,306,000

Table 7 — Population of Ontario as a Percentage of Population of Canada, 1861-1966

Period	Population of Canada 000's	Population of Ontario 000's	Ontario Population as a Percentage of Canada's Population
1861-1871	3,841	1,621	42.2
1871-1881	4,512	1,927	42.7
1881-1891	5,035	2,114	41.9
1891-1901	5,592	2,183	39.0
1901-1911	7,450	2,527	33.9
1911-1921	9,051	2,934	32.4
1921-1931	10,658	3,432	32.2
1931-1941	11,810	3,788	32.1
1941-1951	14,009	4,598	32.8
1951-1961	18,238	6,236	34.2
1961-1966	20,015	6,961	34.8

Source: Records of Upper Canada Legislative Library, Queen's Park.

D. G. Creighton, British North America at Confederation.

Office of the Registrar General, Ontario.

DBS, Census of Canada 1941.

DBS, Daily, August 19, 1968.



Table 8 — Annual Increase in Population<sup>1</sup> in Ontario and Canada 1941 to 1968

Year	Ontario			Canada <sup>2</sup>			Canada <sup>2</sup> Excluding Ontario		
	Population	Average Annual Increase		Population (Includes Nfld.)	Average Annual Increase		Population (Includes Nfld.)	Average Annual Increase	
		000's	%		000's	%		000's	%
1941	3,788	41	1.1	11,810	128	1.1	8,022	87	1.1
1942	3,884	96	2.5	11,962	152	1.3	8,078	56	0.7
1943	3,915	31	0.8	12,108	146	1.2	8,193	115	1.4
1944	3,963	48	1.2	12,262	154	1.3	8,299	106	1.3
1945	4,000	37	0.9	12,394	132	1.1	8,394	95	1.1
1946	4,093	93	2.3	12,622	228	1.8	8,529	135	1.6
1947	4,176	83	2.0	12,888	266	2.1	8,712	183	2.1
1948	4,275	99	2.4	13,167	279	2.2	8,892	180	2.1
1949	4,378	103	2.4	13,447	280	2.1	9,069	177	2.0
1950	4,471	93	2.1	13,712	265	2.0	9,241	172	1.9
1951	4,598	127	2.8	14,009	297	2.2	9,411	170	1.8
1952	4,788	190	4.1	14,459	450	3.2	9,671	260	2.8
1953	4,941	153	3.2	14,845	386	2.7	9,904	233	2.4
1954	5,115	174	3.5	15,287	442	3.0	10,172	268	2.7
1955	5,266	151	3.0	15,698	411	2.7	10,432	260	2.6
1956	5,405	139	2.6	16,081	383	2.5	10,676	244	2.3
1957	5,636	231	4.3	16,610	529	3.2	10,974	298	2.8
1958	5,821	185	3.3	17,080	470	2.8	11,259	285	2.6
1959	5,969	148	2.5	17,483	403	2.4	11,514	255	2.3
1960	6,111	142	2.4	17,870	387	2.2	11,759	245	2.1
1961	6,236	125	2.0	18,238	368	2.1	12,002	243	2.1
1962	6,351	115	1.8	18,583	345	1.9	12,232	230	1.9
1963	6,481	130	2.0	18,931	348	1.9	12,450	218	1.8
1964	6,631	150	2.3	19,290	359	1.9	12,659	209	1.7
1965	6,788	157	2.4	19,644	354	1.8	12,856	197	1.6
1966	6,961	173	2.5	20,015	371	1.9	13,054	198	1.5
1967	7,149	188	2.7	20,405	390	1.9	13,256	202	1.5
1968	7,306	157	2.1	20,744	339	1.6	13,438	182	1.4

<sup>1</sup> As at June 1st.<sup>2</sup> Totals for Newfoundland have been added prior to 1949.

Estimates were based on the Newfoundland Census as follows:

1869 — 146,536; 1874 — 161,374; 1884 — 197,335; 1891 — 202,040; 1901 — 220,984;

1911 — 242,619; 1921 — 263,033; 1935 — 289,588; 1945 — 321,819.

Source: DBS, Census of Canada for Census Years.

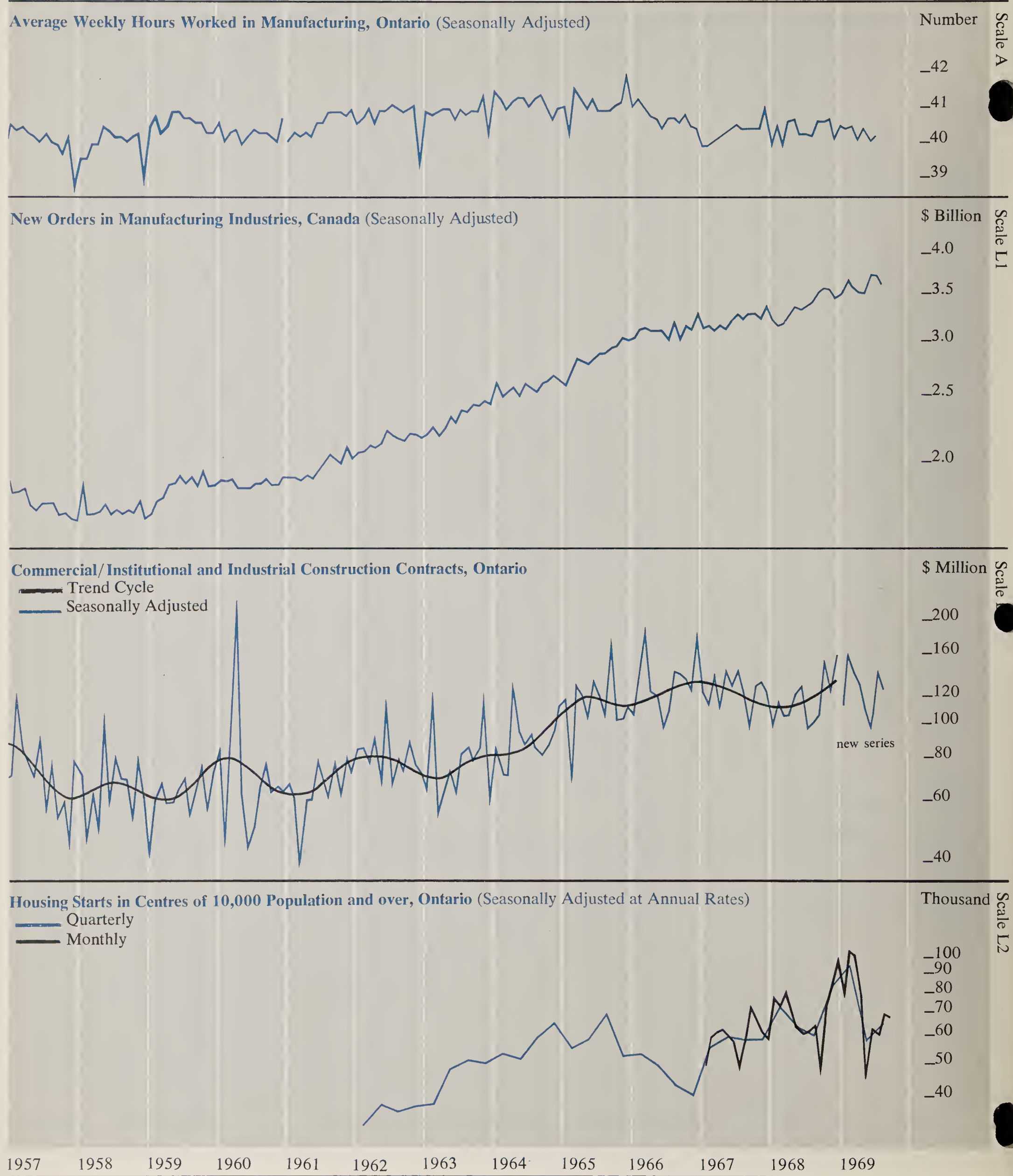
DBS, Population Estimates for Intercensal Years.

DBS, Daily, September 12, 1968.



# Selected Economic Indicators

## Leading Indicators





## Leading Indicators

**Total Money Supply, Canada** (Average of Wednesdays, Seasonally Adjusted)

\$ Billion

\_30

\_25

\_20

\_15

\_14

\_13

Scale L1

**Toronto Stock Exchange Industrial Index** (1956 = 100, Not Seasonally Adjusted)

Index

1956 =

100

\_180

\_160

\_140

\_120

\_100

Scale L2

## Coincidental and Lagging Indicators

**Gross National Product, Canada** (Quarterly, Seasonally Adjusted at Annual Rates)

\$ Billion

\_70

\_60

\_50

\_40

\_35

Scale L1

— Current Dollars

— Constant (1957) Dollars

new series  
(constant 1961 dollars)

**Average Hourly Earnings in Manufacturing, Ontario** (Seasonally Adjusted)

Dollars

\_3.00

\_2.50

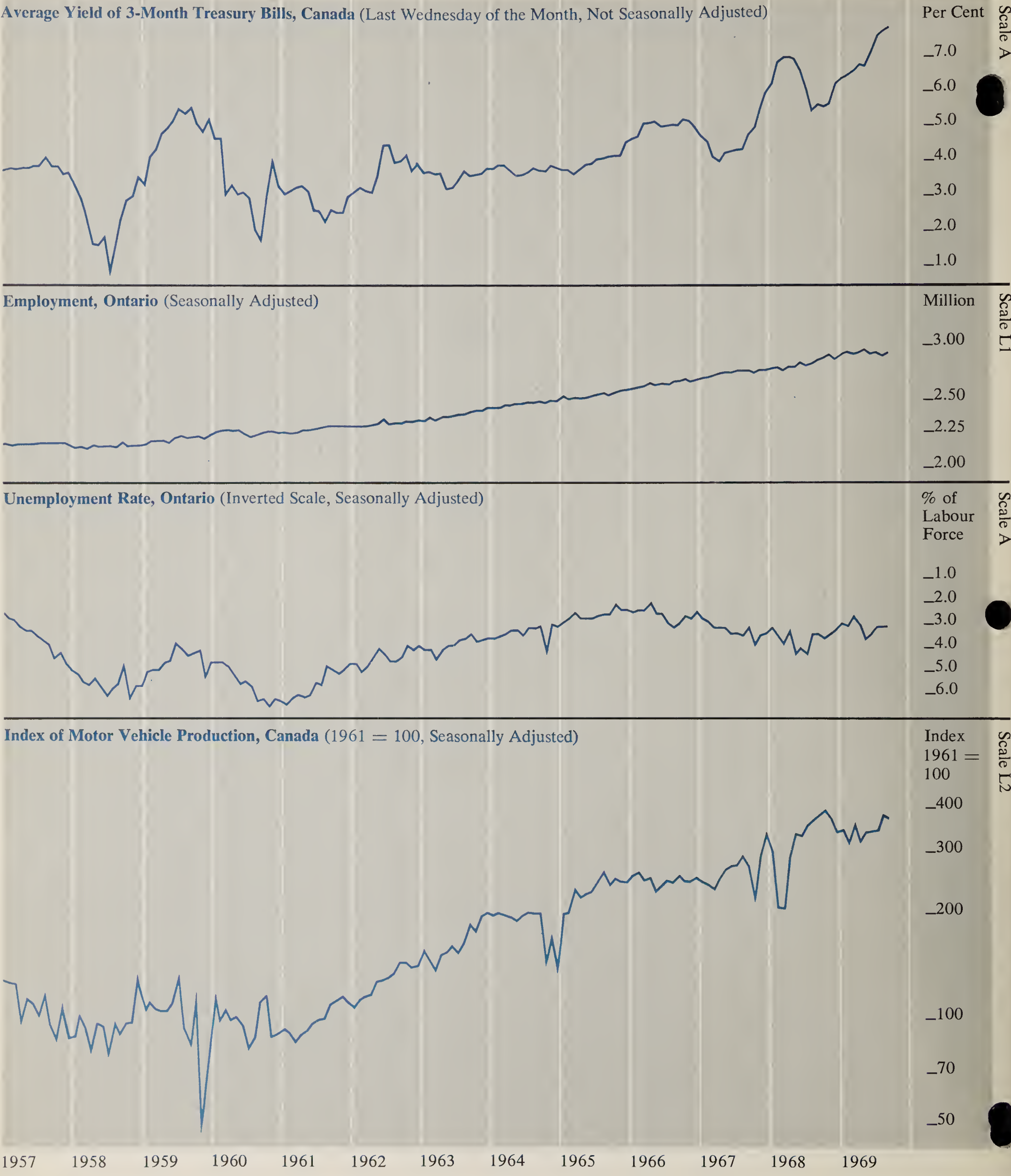
\_2.00

Scale L1

1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969



# Coincidental and Lagging Indicators





Not seasonally adjusted.Not seasonally adjusted





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